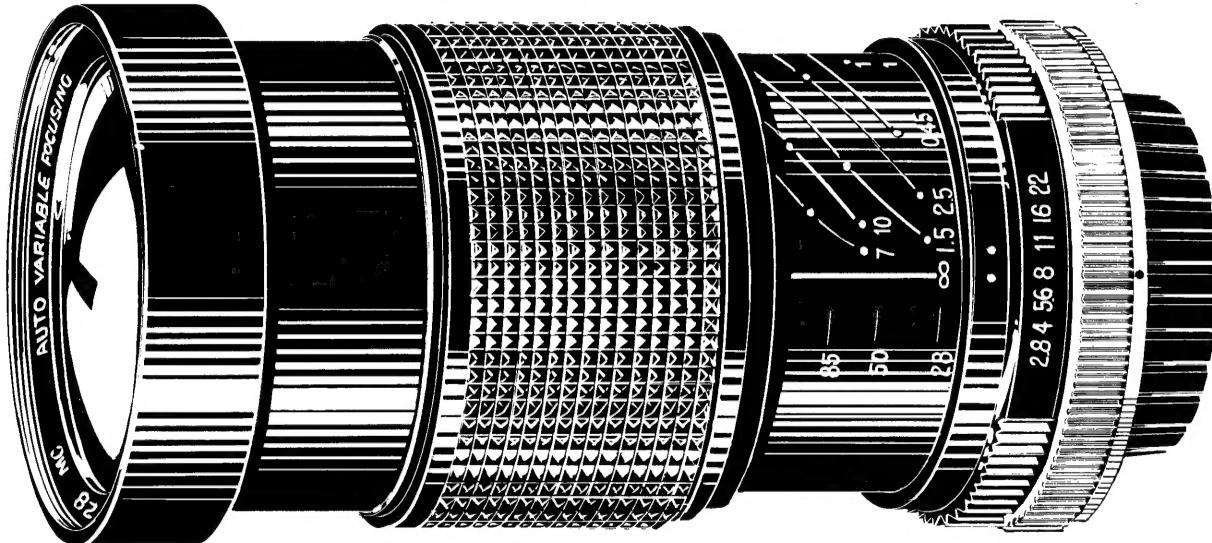


#6.6
1/2
9

Vivitar

Service Manual



**Automatic Fixed Mount Lens
28-85mm f/2.8-f/3.8
VARIABLE FOCUS**

Publication No. 3746153 / March 1981
Revision A February 1982

This publication is Revision A and consists of the following pages:

Page	Revision	Date
Front Cover	A	2/82
Page A	A	2/82
i	A	2/82
ii	Orig	3/81
iii	A	2/82
iv	Orig	3/81
1	A	2/82
2	Orig	3/81
3 - 4	A	2/82
5	Orig	3/81
6	A	2/82
7 - 11	Orig	3/81
12	A	2/82
13 - 14	Orig	3/81
15	A	2/82
16 - 17	Orig	3/81
18 - 19	A	2/82
20 - 21	Orig	3/81
22 - 23	A	2/82
24 - 25	Orig	3/81
26 - 41	A	2/82

Revision A supersedes the original issue of this manual dated March 1981, all copies of which should be discarded. Revision A contains data for two additional mount configurations (Konica and Yashica/Contax) and also incorporates revisions and corrections to the data previously supplied.

For complete list of current manuals available, please request Vivitar Service Publications Index, Publication No. 3746068, from nearest Vivitar Service Center (See page i).

HOW TO USE THIS PUBLICATION

HOW TO FIND PART ORDER NUMBERS

Parts are illustrated on exploded view drawings where each part is identified by a reference number or designator. These reference numbers appear in sequence in the parts lists where they are cross-referenced to the part numbers and descriptions.

When a part is not available separately it will be so indicated by a footnote and can be obtained by ordering the assembly containing it. The part number of that assembly may be shown immediately to the right on the same line in an "Included in Assembly" column or at the end of the parts list(s).

In parts lists for lens items, quantities of each item are listed as used in the different lens mounts. The mounts are referred to as:

N = Nikon Mounts	K = Konica Mount
M = Minolta Mounts	O = Olympus OM Series Mount
C = Canon Mounts	P = Pentax K Mount
	Y = Yashica/Contax Mount

Note that many parts are common to more than one mount. This commonality is shown in the Complete Parts List at the end of the manual so that the service centers desiring to stock replacement parts can order economically.

CAUTION

This publication is intended for use by persons having skills and equipment needed to service the subject product(s) safely and correctly. Users are cautioned that special tools and/or test equipment may be required for proper disassembly, reassembly, alignment, or adjustment or damage to the product may result.

Notice: Information contained herein is subject to change without notice.

HOW TO ORDER PARTS OR SERVICE PUBLICATIONS

Please furnish the model number and serial number of the product for which parts are being ordered. For each part requested, please supply part number, description, and required quantity. Mail or phone parts orders to:

U.S.A.

Vivitar Corporation
Central Parts Service
2700 Pennsylvania Avenue
Santa Monica, CA 90406
Tele: (213) 829-3672
or (213) 870-0181

CANADA

Vivitar Canada Ltd/Ltee
5211 Creekbank Road
Mississauga, Ontario, L4W1R3
Canada
Tele: (416) 624-1761

BELGIUM

Vivitar Belgium, S.A.
29, Passage International
Boite 35
1000 Brussels, Belgium
Tele: 2 2191277
or 2 2191383

FRANCE

Vivitar France, S.A.
5, Avenue de la Resistance
Parc Industriel de la Croix Blanche
91703 Sainte Genevieve des Bois
B.P., 97
France
Tele: (6) 015-9383

WEST GERMANY

Vivitar Photo-Elektronik, GmbH
Vivitar Strasse 7-9
6238 Hofheim/Ts
West Germany
Tele: 06192-7040

HOLLAND

Vivitar B.V.
Nijverheidsweg 11A
P.O. Box 137
3640 AC Mijdrecht,
Netherlands
Tele: 02979 2001

UNITED KINGDOM

Vivitar U.K. Ltd
Vivitar House
Ashville Trading Estate
Nuffield Way
Abingdon, Oxon OX14 1RP
United Kingdom
Tele: (0235) 26600

ASIA, OCEANIA, AFRICA, MIDDLE EAST, CARIBBEAN, LATIN AMERICA

Vivitar Japan Ltd
Marusho Bldg., 6th Floor
12 Yotsua 3-Chome
Shinjuku-Ku
Tokyo 160, Japan
Tele: 357-6021

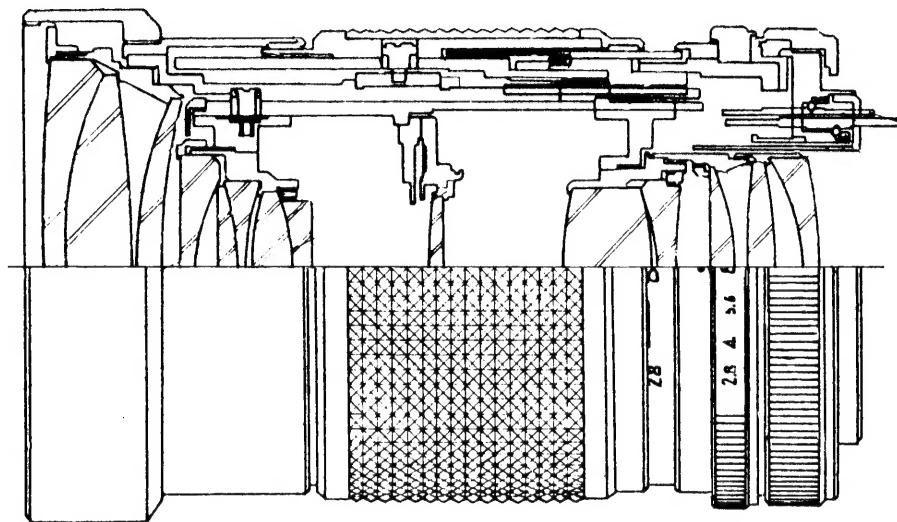
TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1.0	DESCRIPTION	1
1.1	IDENTIFICATION AND MOUNT CONFIGURATION	1
1.2	GENERAL DESCRIPTION	1
1.3	OPERATING PRINCIPLES	2
2.0	TROUBLESHOOTING	3
2.1	GENERAL INSTRUCTIONS	3
2.2	TROUBLESHOOTING	3
2.3	SPECIAL TOOLS AND TEST EQUIPMENT	4
2.3.1	Special Tools	4
2.3.2	Test Equipment	4
3.0	DISASSEMBLY AND REASSEMBLY	5
3.1	HINTS AND PRECAUTIONS	5
3.2	DISASSEMBLY PROCEDURES	6
3.2.1	Removal of First and Second Lens Group Assemblies	6
3.2.2	Removal of Fourth Lens Group Assembly	6
3.2.3	Removal of Mount Assembly	6
3.2.4	Removal of Control Ring	7
3.2.5	Disassembly of Main Component Group	7
3.2.6	Removal of Diaphragm Housing Assembly for Service	9
3.2.7	Disassembly of Diaphragm Housing Assembly	9
3.3	CLEANING, INSPECTION, AND LUBRICATION	10
3.3.1	Cleaning and Inspection	10
3.3.2	Lubrication	10
3.4	REASSEMBLY	11
3.4.1	Reassembly at Diaphragm Housing Assembly	11
3.4.2	Installation of Diaphragm Housing Assembly	11
3.4.3	Reassembly of Infinity Stop Ring and Helicoid Frame on Outer Helicoid	12
3.4.4	Assembly of Cam Tube and Inner Helicoid to Outer Helicoid	12
3.4.5	Remaining Reassembly	13
3.5	ADJUSTMENTS	13
3.5.1	Positioning of Diaphragm Housing Assembly	14
3.5.2	Refocusing	14
3.6	IDENTIFICATION OF CAM ROLLERS AND SHAFT SCREWS	16
4.0	ILLUSTRATED PARTS LIST	17

LIST OF ILLUSTRATIONS

Figure	Title	Page
3-1	Initial Disassembly Steps	6
3-2	Cowling Ring and Control Ring Removal	7
3-3	Main Component Group	7
3-4	Fourth Lens Group Slide, Inner Helicoid, and Cam Tube	8
3-5	Outer Helicoid and Helicoid Frame	8
3-6	Removal of Idler Ring and Retaining Ring	9
3-7	Typical Diaphragm Assembly	9
3-8	Lubrication Points	11
3-9	Assembly of Infinity Stop Ring and Helicoid Frame on Outer Helicoid	12
3-10	Correct Starting Position of Helicoid Threads	13
3-11	Position of Notches at Thread Limit if Engagement is Correct	13
3-12	Helicoid Notch Positioning For Reinstallation of Guides	13
3-13	Guide Roller Washer, Guide Roller, and Shaft Screw	16
3-14	Washer, Cam Roller B, Cam Roller A, and Shaft Screw	16
4-1	Assemblies and Parts Common To All Mount Configurations	18
4-2	Nikon Diaphragm Housing Assembly	20
4-3	Nikon Mount Assembly	20
4-4	Minolta Diaphragm Housing Assembly	22
4-5	Minolta Mount Assembly	22
4-6	Canon Diaphragm Housing Assembly	24
4-7	Canon Mount Assembly	24
4-8	Konica Diaphragm Housing Assembly	26
4-9	Konica Mount Assembly	26
4-10	Olympus Diaphragm Housing Assembly	28
4-11	Olympus Mount Assembly	28
4-12	Pentax Diaphragm Housing Assembly	30
4-13	Pentax Mount Assembly	30
4-14	Yashica/Contax Diaphragm Housing Assembly	32
4-15	Yashica/Contax Mount Assembly	32
4-16	First Lens Group Assembly	34
4-17	Second Lens Group Assembly	34
4-18	Fourth Lens Group Assembly	34
4-19	Helicoid Assembly	36

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**



SECTION 1

DESCRIPTION

1.1 IDENTIFICATION AND MOUNT CONFIGURATIONS

This document is the Service Manual with Illustrated Parts List for the Vivitar Automatic Fixed Mount 28-85mm f/2.8-3.8 Variable Focus Lens. Following the introduction, the manual contains detailed instructions for troubleshooting, disassembly, reassembly, cleaning, lubrication, and adjustment of the lens. Section 4 is the Illustrated Parts List with exploded views illustrating all maintenance-significant parts.

The lens is currently being supplied in the seven mount configurations listed below.

Mount	Vivitar Stock No.	Vivitar Part No.
Nikon AI Mount (N)	0216601	3900330
Minolta MD Mount (M)	0216586	3900328
Canon FD Mount (C)	0216597	3900329
Konica Mount (K)	0216635	3900467
Olympus OM Mount (O)	0216602	3900331
Pentax K, M Mount (P)	0216623	3900332
Yashica/Contax Mount (Y)	0216634	3900468

1.2 GENERAL DESCRIPTION

This variable focus lens is compact, relatively lightweight, and focuses to one-quarter life size at the 28mm focal length. Focal length and focus are both controlled by the same ring. The various mount designs provide coupling to the camera bodies for full open metering and for camera control of aperture on cameras that have this feature.

SPECIFICATIONS*

Construction	14 elements in 11 groups
Aperture Range	28mm f/2.8 to f/16, 85mm f/3.5 to f/22
Effective Focal Length	28-85mm
Focal Length Ratio	3:1
Angles of Acceptance	74 - 29 degrees
Minimum Focusing Distance From Film Plane	25cm (9.8 in.)
Maximum Reproduction Ratio	1:4
Weight	650 g (22.9 oz.)
Length at Infinity	105mm (4.1 in.)
Maximum Barrel Diameter	70mm (2.8 in.)
Lens Coating	Multicoated
Accessory Size	72mm

* Specifications are subject to change without notice.

Automatic Fixed Mount

Variable Focus Lens

28–85mm f/2.8–3.8

1.3 OPERATING PRINCIPLES

The first lens group (front) and the fourth lens group (rear) are mounted in opposite ends of the cam tube and move as a unit with the cam tube throughout the full 15mm fore and aft motion as the focal length of the lens is shifted. The second lens group is mounted in a ring that slides in the inner helicoid. The ring is supported by two sets of cam rollers that extend through and are driven by the overlapping cam slots of the cam tube and the inner helicoid. As the cam tube is driven forward by the control ring, the points of intersection of the two sets of cam slots move backward, which moves the second lens group away from the first lens group. The combined motions of the whole assembly moving forward and the second lens group moving away from the first simultaneously increases the focal length and approximately refocuses the lens. Final focus at each focal length is achieved by combined movement of the third and second lens groups. The third lens group is mounted in the diaphragm assembly which is mounted in the inner helicoid. Rotation of the control ring for focus drives the inner helicoid forward through a maximum range of approximately 13mm carrying the third lens group with it and also moves the second lens group forward through a small distance relative to the first and third lens groups. The combination of these two motions refines the focus.

Since there is no iris compensation, the effective aperture is reduced as the focal length increases. Auto diaphragm operation and aperture control are conventional.

SECTION 2

TROUBLESHOOTING

2.1 GENERAL INSTRUCTIONS

Before disassembling a lens, determine as far as possible the exact nature of the problem, so that disassembly can be limited to the depth necessary for correction of the problem. The following Troubleshooting Chart lists the most common malfunctions occurring in this lens and suggests probable causes and correction procedures.

2.2 TROUBLESHOOTING

TROUBLESHOOTING CHART

Symptom	Probable Cause	Correction
Physical damage	Lens bumped or dropped	Replace damaged parts and check control action and focus.
Lens rattles when shaken.	Excessive wear, detached parts, loss of grease from lubricated areas. (Some rattle is normal in all variable focus and zoom lenses because clearance must be left in dry-lubricated parts.)	Disassemble and replace worn parts, tighten or reconnect loose parts, clean and relube per para. 3.3.
Tight, rough or erratic control action	Dirt on friction surfaces Grease on inner surface of inner helicoid Distorted cam slots Worn or poorly fitting cam rollers	Disassemble, clean, and relube. Disassemble, clean, and relube. Replace affected cam tubes. Replace cam rollers.
Loose and erratic control action	Worn cam rollers Distorted cam slots Loose cam roller shaft screws	Replace cam rollers. Replace affected cam tubes. Replace damaged parts, seat screws firmly with thread sealant.
Diaphragm hangs up	Diaphragm pin broken off Blade return spring unhooked or broken	Replace diaphragm blade. Repair or replace spring.
Incorrect light transmission for aperture setting	Diaphragm housing assembly incorrectly mounted	Adjust per para. 3.5.1.
Lens cannot be focused at infinity	Lens improperly assembled	Reassemble properly.
Infinity focus not at infinity stop at 85mm	Wrong thickness of 85mm (front) focus shims	Adjust shim thickness per para. 3.5.2.
Infinity focus not at infinity stop at 28mm	Wrong thickness of rear focus shims	Adjust shim thickness per para. 3.5.2.
Infinity focus not at infinity stop at any focus setting	Loose lens mount	Reinstall lens mount, use sealant on threads, and tighten screws.

Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8

2.3 SPECIAL TOOLS AND TEST EQUIPMENT

2.3.1 Special Tools

The following special tools have been designed and fabricated by Vivitar to simplify and expedite the disassembly and reassembly of these lenses.

Tool No.	Name
3650740	Second and 4th Lens Group Assembly Removal Tool, 28-85mm Lens
3650742	Aperture Gage Tool, 28-85mm Lens
3650743	Third Lens Group Removal Pin Tool, 28-85mm Lens

2.3.2 Test Equipment

The following optical test equipment will be required for refocusing the lens if optical components are replaced or if the thickness of the original focus shims has been lost.

1. Autocollimator, approximately 190mm focal length
2. Micrometer focusing gage
3. Field collimator, 500mm focal length
4. Reliable camera body to fit the lens

SECTION 3

DISASSEMBLY AND REASSEMBLY

3.1 HINTS AND PRECAUTIONS

1. Before attempting to remove any screws, apply ketone solvent such as acetone, or methyl ethyl ketone (MEK) around the screw to soften the thread sealant. If the screw does not readily release, apply more solvent. All rings, screws and pins can be removed with normal pressures. In some cases the tip of a hot soldering iron will soften the thread sealant and allow a screw to be removed.
2. Before finally tightening any screw, apply sealant to the threads.
3. Before removing any retaining ring, flow sufficient solvent into the thread area and allow the sealing agent to soften.
4. Before fully tightening a retaining ring, flow sealant into its thread to lock it in place.
5. On all surfaces which require grease, use only a light film of lubricant. Too much grease has a way of creeping onto parts, such as diaphragm blades, which should be dry. (Refer to lubricant table)
6. Never tighten a setscrew so tight as to split the head or distort the parts around it.
7. Pay particular attention to refocusing the lens. Assure that focus is exactly correct at limiting positions and within stated tolerance at all intermediate positions.
8. Avoid excessive force, which can lead to expensive (and unnecessary) replacement of parts or assemblies.
9. Cleaning of lens surfaces can usually be accomplished by use of a mixture of 70 percent ether and 30 percent alcohol.
10. Before attempting any repair, read the manual thoroughly.

NOTE

Parts reference numbers used throughout the maintenance procedures in this manual are the same as those used in the Illustrated Parts List, Section 4.

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

3.2 DISASSEMBLY PROCEDURES

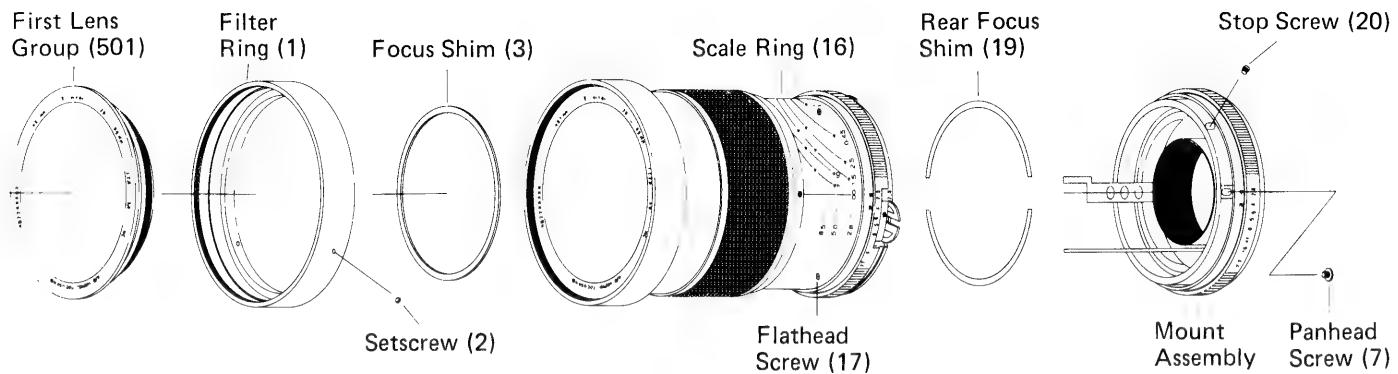


Figure 3-1. Initial Disassembly Steps

3.2.1 Removal of First and Second Lens Group Assemblies (Figure 3-1)

1. With pin point dividers inserted in slots in the identification ring, unscrew the first lens group (501).
2. Remove the 85mm (Front) focus shims and lay them safely aside so the same shims can be used on reassembly.
3. Unscrew the baffle ring (43).
4. Clamp Tool No. 3650740 onto the second lens group (502) and unscrew the assembly from the slide ring (44).

3.2.2 Removal of Fourth Lens Group Assembly

1. Remove Shade Pipe.
2. Unscrew fourth lens group assembly (506) with tool No. 3650740.

3.2.3 Removal of Mount Assembly (Figure 1)

1. Set lens to 85mm position.
2. Remove three flathead screws (17) in scale ring (16). Slide scale ring to full forward position.
3. Remove four large head panhead screws (7) and one stop screw (20).
4. Remove the split rear focus shims and lay them safely aside so same shims can be used on reassembly.
5. Remove mount assembly and slide scale ring off to the rear.

3.2.4 Removal of Control Ring (Figure 3-2)

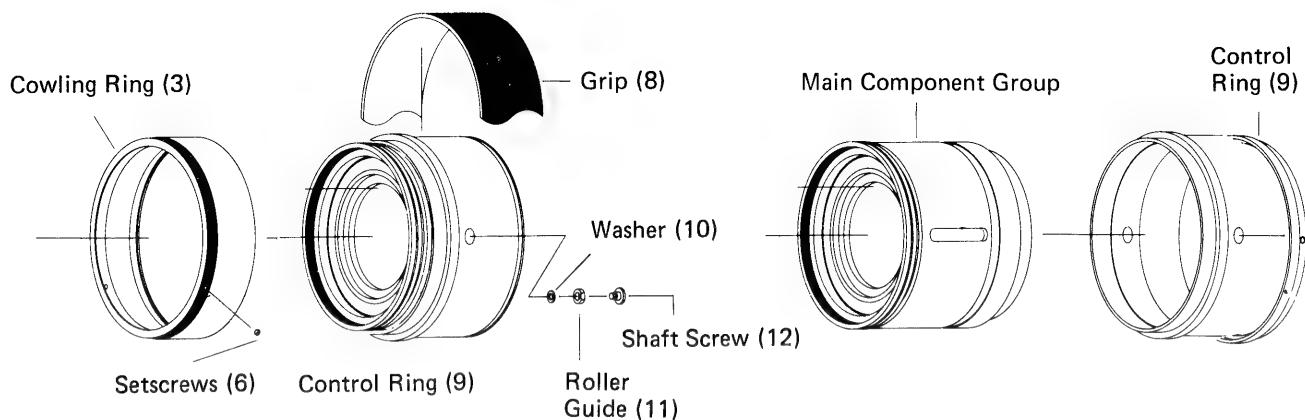


Figure 3-2. Cowling Ring and Control Ring Removal

1. Loosen or remove the three setscrews (6) in the cowling ring (3) and slide the cowling ring off forward.
2. Roll the rubber grip (8) back to expose the guide roller shaft screws (12).

NOTE

The guide roller shaft screws are threaded into the idler ring (37). Threads are held with a thread sealant that may be difficult to break loose. With a screwdriver having correct width and a handle of at least 25mm diameter, quickly twist in a clockwise direction then quickly in a counter-clockwise direction. This should break the sealant and allow easy removal. If this procedure fails, apply heat with the tip of a heavy soldering iron to soften the sealant.

3. Remove the guide roller shaft screws (12), the guide rollers (11), and the washers (10).
4. Slide the control ring (9) off the back of the lens.

3.2.5 Disassembly of Main Component Group (Figures 3-4 through 3-6)

1. Remove the two panhead screws (55) and two flathead screws (53) that hold the helicoid guides (38) and (52) to the outer helicoid (50). Remove the helicoid guides (Figures 3-3).

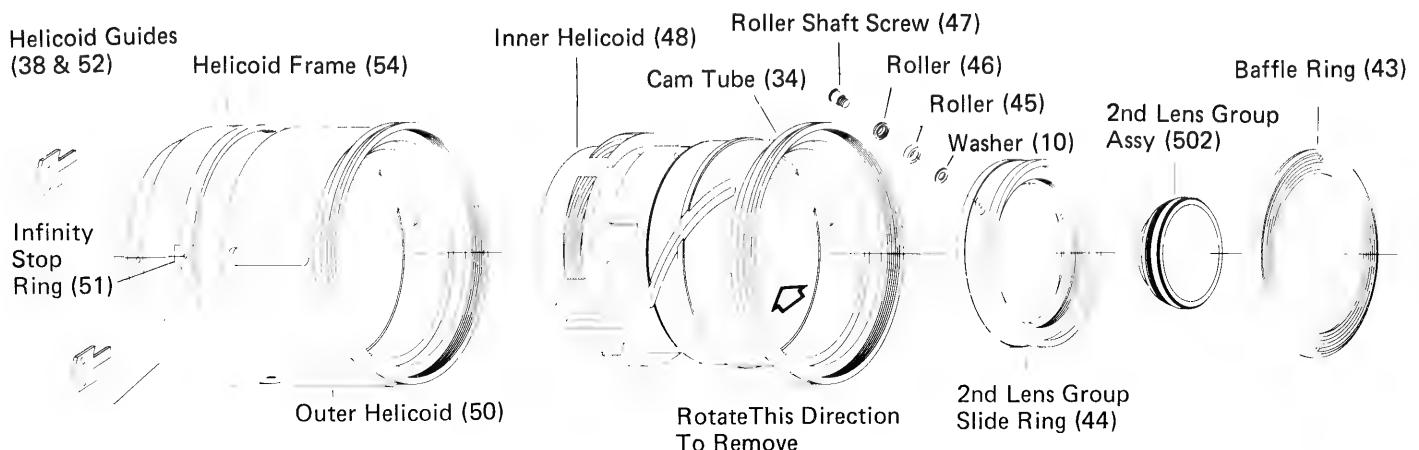


Figure 3-3. Main Component Group

**Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8**

2. Unscrew and remove light baffle ring (43).
3. Rotate the cam tube (34) and the inner helicoid (48) in the direction shown in Figure 3-3 to separate them from the outer helicoid.
4. Remove roller shaft screws (47), rollers (46 and 45), and washers (10); then remove second lens group slide ring (44) by sliding outward to front of lens assembly.

NOTE

Tool No. 3650740 can be clamped into the second lens group for convenient removal of the slide ring and second lens group together.

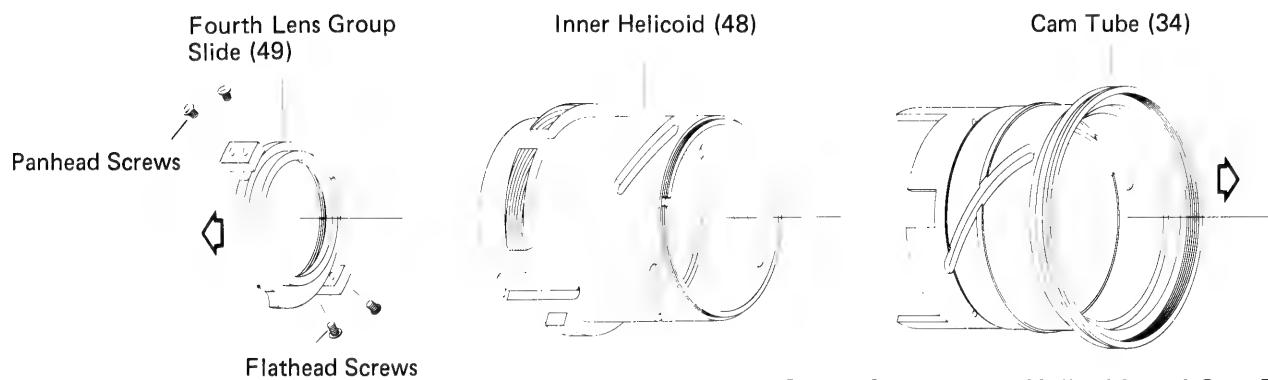


Figure 3-4. Fourth Lens Group Slide, Inner Helicoid, and Cam Tube

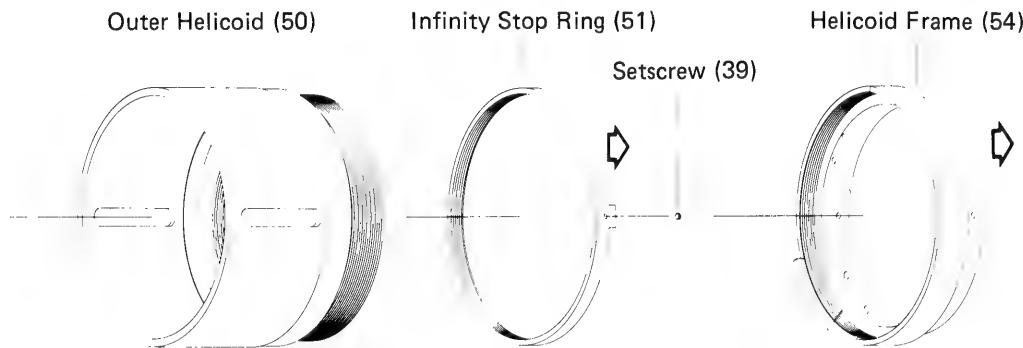


Figure 3-5. Outer Helicoid and Helicoid Frame

5. Remove four screws (Figure 3-4) that hold the fourth lens group slide (49) to the inner helicoid (48).
6. Remove the fourth lens group slide and separate the inner helicoid from the cam tube.
7. This is the earliest point at which the third lens group (505) can be removed. If it is necessary to remove it for cleaning without removing the diaphragm housing assembly, use the pin Tool No. 3650743 to unscrew the lens group.
8. Loosen or remove the two setscrews (39) in the infinity stop ring (51, Figure 3-5). Unscrew the helicoid frame (54) and the stop ring from the outer helicoid (50).
9. Remove the three flathead screws (42) in the retainer ring (41, Figure 3-6) and slide the idler ring (37) and retainer ring off.

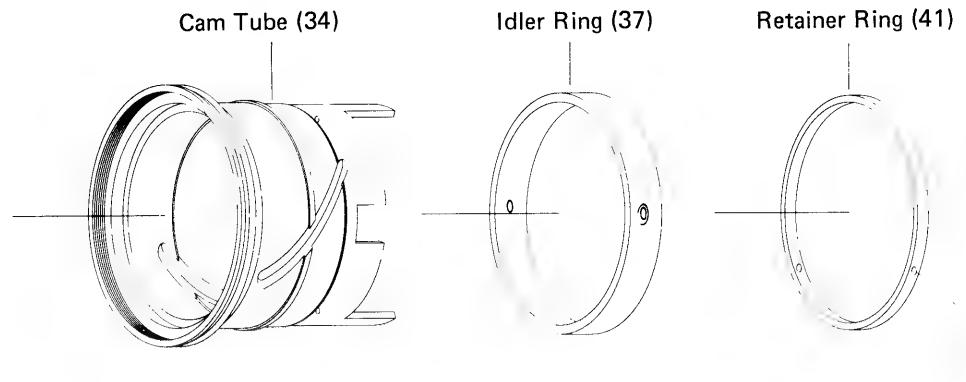


Figure 3-6. Removal of Idler Ring and Retainer Ring Flathead Screws (42)

3.2.6 Removal of Diaphragm Housing Assembly for Service

Removal of the diaphragm housing assembly for service requires major disassembly as described in the previous paragraphs. Proceed as follows:

1. Remove first and second lens group assemblies (Para. 3.1.1).
2. Remove fourth lens group assembly (Para. 3.1.2).
3. Remove mount assembly (Para. 3.1.3).
4. Remove the helicoid guides (Para. 3.1.5, Step 1).
5. Remove the cam tube and inner helicoid (Para. 3.1.5, Step 3).
6. Remove fourth lens group slide (Para. 3.1.5, Step 6).

NOTE

Disassembly to this point allows access to the diaphragm housing assembly, which is secured to the inside of the inner helicoid with three large head, panhead screws (7) identical to the ones that hold the mount assembly to the lens.

7. Scribe a small line across the juncture of the diaphragm housing and the rim inside the helicoid. Remove the three screws (7) and drop the diaphragm housing assembly out the rear.

3.2.7 Disassembly of Diaphragm Housing Assembly (See Figure 3-7 and appropriate exploded view in Section 4.)

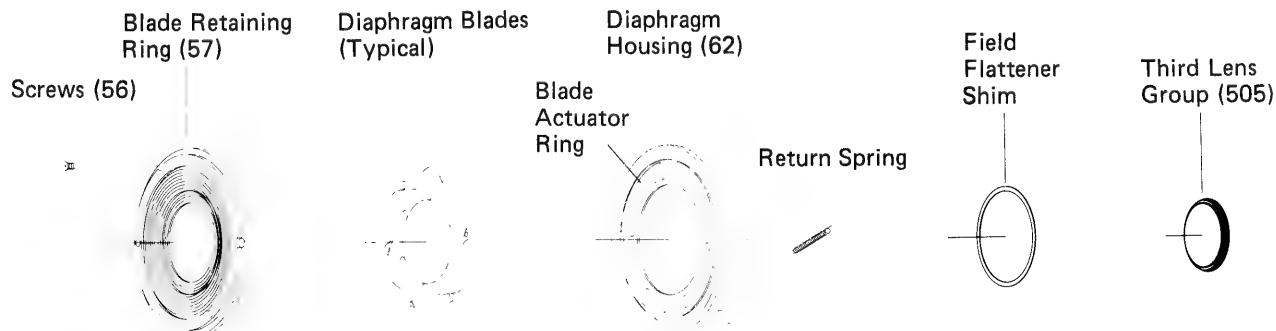


Figure 3-7. Typical Diaphragm Housing Assembly

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

1. Unhook the blade return spring from the blade actuator ring so the ring will lie flat in the diaphragm housing.
2. Scribe a line across the edges of the blade retainer ring and the diaphragm housing.
3. Place diaphragm housing assembly on a suitable support, Tool No. 3650742, and remove the three screws (56) that hold the blade retaining ring (57) to the diaphragm housing (62).
4. Carefully remove diaphragm blades and blade actuator ring.
5. Unscrew the third lens group (505) and drop it out.

3.3 CLEANING, INSPECTION, AND LUBRICATION

Before reassembling the lens, clean all parts and assemblies carefully, inspect for evidence of wear or damage that would make the part inoperable, and apply necessary lubrication in accordance with the following instructions:

3.3.1 Cleaning and Inspection

1. Wipe off any lubricant and clean mechanical parts and subassemblies in an ultrasonic cleaner or by flushing with trichloroethylene. Be particularly sure that diaphragm blades are absolutely clean and dry.
2. Blow dust and grit off optical parts and clean optical surfaces by wiping carefully with lens cleaning tissue moistened with a blend of 70 percent ether and 30 percent alcohol or other suitable lens cleaner.
3. Inspect all parts and test all subassemblies for proper operation. Repair or obtain replacements for any parts or subassemblies that are no longer serviceable.

3.3.2 Lubrication

This lens is lubricated only in the areas listed below and illustrated in Figure 3-8.

1. The outer surface of the inner helicoid overlapping the cam tube.
2. The helicoid threads.
3. The fine threads between the outer helicoid and the helicoid frame.

CAUTION

Be sure that no lubricant of any kind is applied to the inside of the inner helicoid or the bearing surfaces of second lens group slide ring. These surfaces have a self-lubricating surface treatment. Additional lubrication will interfere with the proper operation of the zoom action and may contaminate the diaphragm leaves requiring costly disassembly and cleaning.

The specified lubricant is Lubricant A (Losoid 33DK).

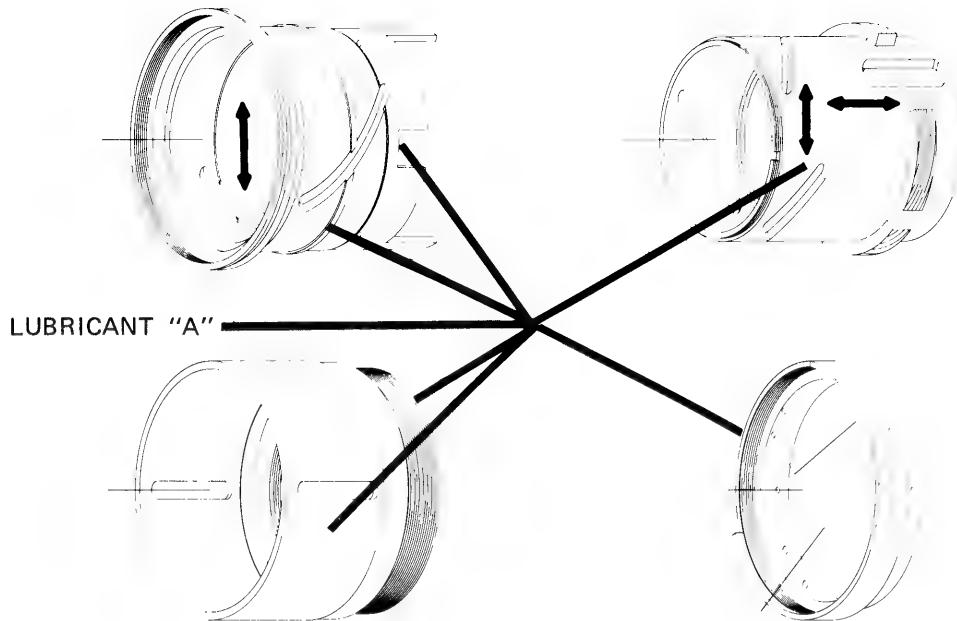


Figure 3-8. Lubrication Points

3.4 REASSEMBLY

3.4.1 Reassembly of Diaphragm Housing Assembly

Before attempting reassembly of the diaphragm, turn to the appropriate exploded view in Section 4 of the manual and determine whether the blades are laid up clockwise or counter-clockwise; then proceed as follows:

1. If they have been removed, install the cam follower crank assembly, the aperture cam, and the stop plate (69) on the back surface of the diaphragm housing (62).
2. Place the diaphragm housing on a suitable support, Tool No. 3650742, to keep the projecting arms from touching the work surface and drop the blade operating ring into position.
3. Lay up the diaphragm blades in either the clockwise or counter-clockwise arrangement as required for the particular lens. Be sure the blade pins engage the holes in the blade operating ring and the diaphragm housing. (The blades will lay up easier in the full open position.)
4. Lay the blade retaining ring (57) in position, matching the scribe lines that were made at the time of disassembly, and install the three flathead screws (56) in the counterbored holes.
5. Turn the assembly over and re-attach the blade return spring to the arm of the blade operating ring.
6. Test for proper operation.

3.4.2 Installation of Diaphragm Housing Assembly

1. Position diaphragm housing assembly on the top of Tool No. 3650742 (or other suitable support) with the operating arms pointing down and lower the inner helicoid down over it.
2. Rotate the assembly as necessary to match up the scribe marks made at the time of removal and install and tighten the three large-head retaining screws (7).

NOTE

If there are no scribe marks, see Para. 3.5.1, page 14, under Adjustments for alignment procedure.

3.4.3 Reassembly of Infinity Stop Ring and Helicoid Frame on Outer Helicoid

1. Thread the infinity stop ring (51) onto the outer helicoid (50) sixteen revolutions to a point where the distance from the edge of the outer helicoid to the face of the stop ring (not the stop lug) is 4.15mm. (See Figure 3-9.)
2. Start threading the helicoid frame (54) onto the outer helicoid with the cutout in the helicoid frame engaging the stop lug on the infinity stop ring.
3. After a few turns, check the spacing between the helicoid frame and the stop ring. The spacing must be 0.25mm when the stop lug is against the end of the cutout as shown in Figure 3-9. If it is not, repeat steps 1 and 2 above.
4. If the spacing is correct, continue threading the helicoid frame and the stop ring onto the outer helicoid until the overall length of the assembly from the front of the outer helicoid to the mount shoulder on the helicoid frame is $63.0 \pm 0.05\text{mm}$ as shown in the illustration.
5. With the stop lug of the infinity stop ring against the cutout in the helicoid frame and the dimensions as specified above, tighten the two setscrews (39) in the infinity stop ring.

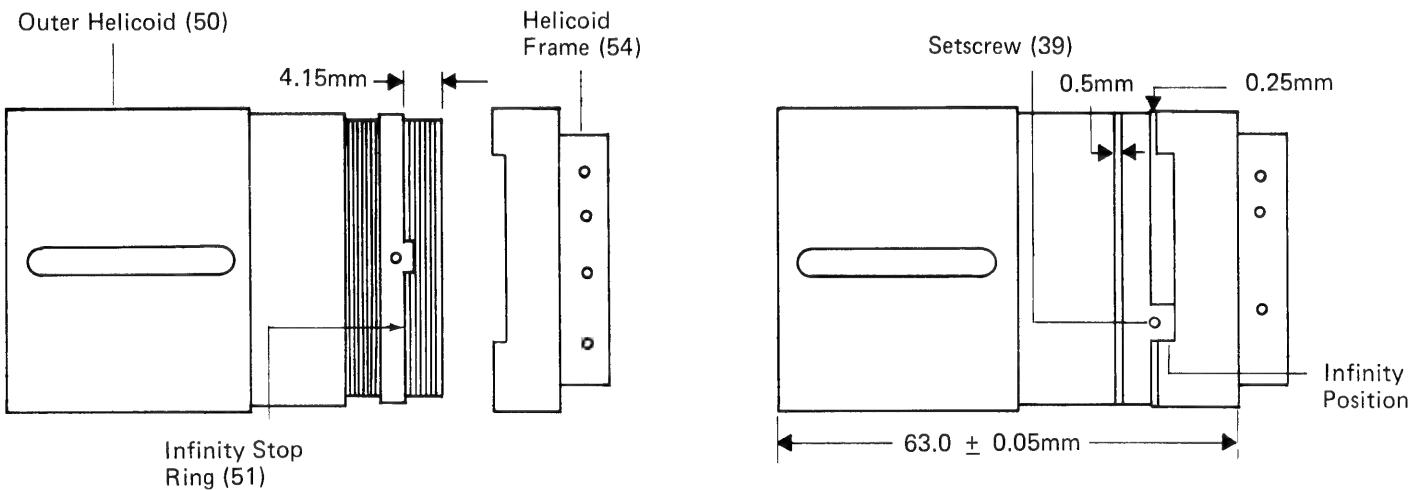


Figure 3-9. Assembly of Infinity Stop Ring and Helicoid Frame on Outer Helicoid

3.4.4 Assembly of Cam Tube and Inner Helicoid to Outer Helicoid

There is only one correct starting position for meshing the helicoid threads. To locate the correct position, proceed as follows:

1. Have the diaphragm housing assembly, the 2nd lens group slide ring, and the 4th lens group slide installed in the inner helicoid. Place the inner helicoid on the work surface, rear end up, and orient it so the notch in the tip of the cam ring is at the 1:00 o'clock position. (See Figure 3-10.)
2. On the outer helicoid assembly turn the helicoid frame to the infinity position against the infinity stop. Now lower the outer helicoid assembly down over the inner helicoid with the notch in the helicoid frame at approximately the 9:00 o'clock position as shown in Figure 3-10. Note in Figure 3-10 that the exact starting position of the helicoid thread is at the point where the edge of the cam ring projection is in line with the screw hole for the helicoid guide.

3. Carefully line up the parts and engage the threads with a clockwise rotation of the inner helicoid assembly. Continue turning to the limiting position. If the helicoid threads are correctly engaged, the notches in the outer helicoid and the tip of the cam ring will appear as shown in Figure 3-11. (Be sure that the helicoid frame is still at the infinity position against the infinity stop.) If the position is not correct, separate the parts and repeat Steps 1 through 4 above.

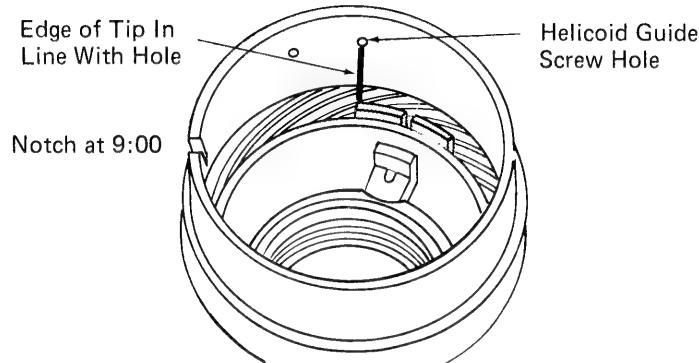


Figure 3.10. Correct Starting Position of Helicoid Threads

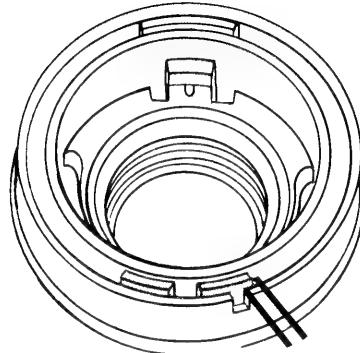


Figure 3-11. Position of Notches at Thread Limit if Engagement is Correct

4. Back-rotate the helicoids slightly to the positions shown in Figure 3-12 and install the helicoid guides, making sure that each guide is installed in its original location. Use thread sealant on the screw threads and put the flathead and panhead screws in the appropriate holes.

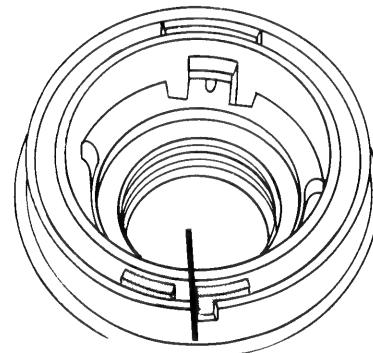


Figure 3-12. Helicoid Notch Positioning For Reinstallation of Guides

3.4.5 Remaining Reassembly

Remaining reassembly is the reverse of the disassembly procedure and is self-evident.

CAUTION

Do not apply thread sealant to the front lens group threads until focus tests are completed and the correct thickness of the front focus shims has been determined.

3.5 ADJUSTMENTS

The following adjustment procedures will ensure that the lens focuses and zooms properly and gives correct exposures. Required test equipment and supplies are listed.

3.5.1 Positioning of Diaphragm Housing Assembly

If the diaphragm housing assembly has been removed without scribe marks to indicate its proper position, or if a new assembly is being installed; the following procedure will insure that the installation is correct. The Aperture Gage Tool No. 3650742 is used to set the aperture opening to the correct size. Proceed as follows:

1. Have the diaphragm housing assembly completely assembled.
2. Install the diaphragm housing assembly in the inner helicoid but do not tighten the retaining screws.
3. Complete the assembly of the helicoid assembly.
4. Have the mount assembly completely assembled except for the shade pipe and the mount.
5. Install the mount assembly. (Rotate the diaphragm housing assembly as necessary to engage the aperture transfer arm on the mount assembly with the projecting arm of the diaphragm cam in the diaphragm housing assembly.) Install the shims (19), then the guide screw (20), then the panhead screws (7), being sure to press the mount assembly against the rear of the helicoid assembly to compress the shims before tightening the screws.
6. Push the cam tube (34) as far in as it will go, rotate the outer helicoid (50) against the infinity stop, and set the aperture setting ring to the widest aperture.
7. Now carefully rotate the diaphragm housing assembly until the diaphragm blades just clear the maximum aperture opening and tighten one retaining screw enough to hold it in position.
8. Check operation of the diaphragm by rotating the aperture setting ring through the full range of stops. If the operation is satisfactory, proceed with the following aperture calibration steps.
9. Set the aperture gage tool upright on the bench and lower the lens assembly down over it (rear end first) until the tool seats in the rear of the diaphragm assembly.
10. Set the aperture setting ring to f/5.6. The smaller of the two engraved orange circles is the gage diameter for f/5.6. Loosen the retaining screw and carefully adjust the angular position of the diaphragm housing assembly until the edges of the diaphragm blades just touch the outer edge of the f/5.6 gage circle, then tighten the retaining screws.
11. Now check the aperture opening at minimum and maximum settings. The hole in the center of the gage tool is the minimum aperture diameter. Set the aperture setting ring to the minimum aperture position. The diaphragm blades should just encircle the drilled hole. Set the aperture setting ring to the maximum aperture. The blades should just clear the maximum aperture stop of the diaphragm housing assembly.
12. Remove the gage tool and install the third lens group in the back of the diaphragm housing assembly with the aid of Installation Tool No. 3650743.

3.5.2 Refocusing

Refocusing will be required if optical parts have been replaced, if certain mechanical parts have been replaced, or if the focus shims were lost at disassembly. In any event the focus must always be tested to be sure that it is within

tolerance whenever the lens is serviced. The following test equipment and supplies will be required:

1. Test Equipment

- a) Micrometer focusing gage
- b) Autocollimator, approximately 190mm focal length
- c) Field collimator, 500mm focal length
- d) Reliable camera body to fit lens

2. Supplies

- a) 85mm focus shims; 0.10, 0.15, 0.20, 0.25, 1.0mm thickness
- b) Split rear focus shims; 0.10, 0.15, 0.20, 0.25, 1.0mm thickness

If parts have been changed that will require refocusing of the lens, reassemble the lens and test as follows:

1. Install the mount assembly with an initial shim thickness of 0.6mm.
2. Install the front lens group with a 1.0mm and a 0.15mm front focus shim.
3. Seat the front lens group firmly.
4. Adjust the height of the autocollimator so the distance from the simulated film plane to the optical center of the collimator objective is equal to the focal length of the collimator.
5. Adjust the micrometer focusing gage to + 0.04mm (to compensate for the fact that the film surface lies behind the plane of the inner rails).
6. Position the lens on the micrometer focusing gage and check for infinity focus at both the 28 and 85mm focal lengths by turning the helicoid away from and back to the infinity stop while observing the target image in the autocollimator.
7. If no infinity focus is obtainable, the lens has been incorrectly assembled. Recheck the assembly procedures.
8. If the assembly of the lens is all right, start final adjustment by changing the front shims. Set the lens to 85mm position and set the focus against the infinity stop, now carefully focus the lens by adjusting the micrometer focusing gage while watching the target image.
9. If the adjustment of the focusing gage was in the negative direction, remove a comparable thickness of shim from behind the front lens group. If it was in the positive direction, add a comparable amount. Reset the gage to + 0.04mm.
10. Now set the lens to the 28mm position and repeat the procedure in Steps 8 and 9, but this time remove rear shims equal to the change in setting if it is minus or add rear shims equal to the change if it is plus.
11. Repeat Steps 8 and 9 as necessary to achieve good infinity focus at both the 85mm and the 28mm focal length settings.
12. As a final check, mount the lens on a reliable camera body and make sure the performance is satisfactory through the viewfinder.

3.6 IDENTIFICATION OF CAM ROLLERS AND SHAFT SCREWS

Figures 3-13 and 3-14 below are provided as supplementary information for the positive identification of these critical parts.

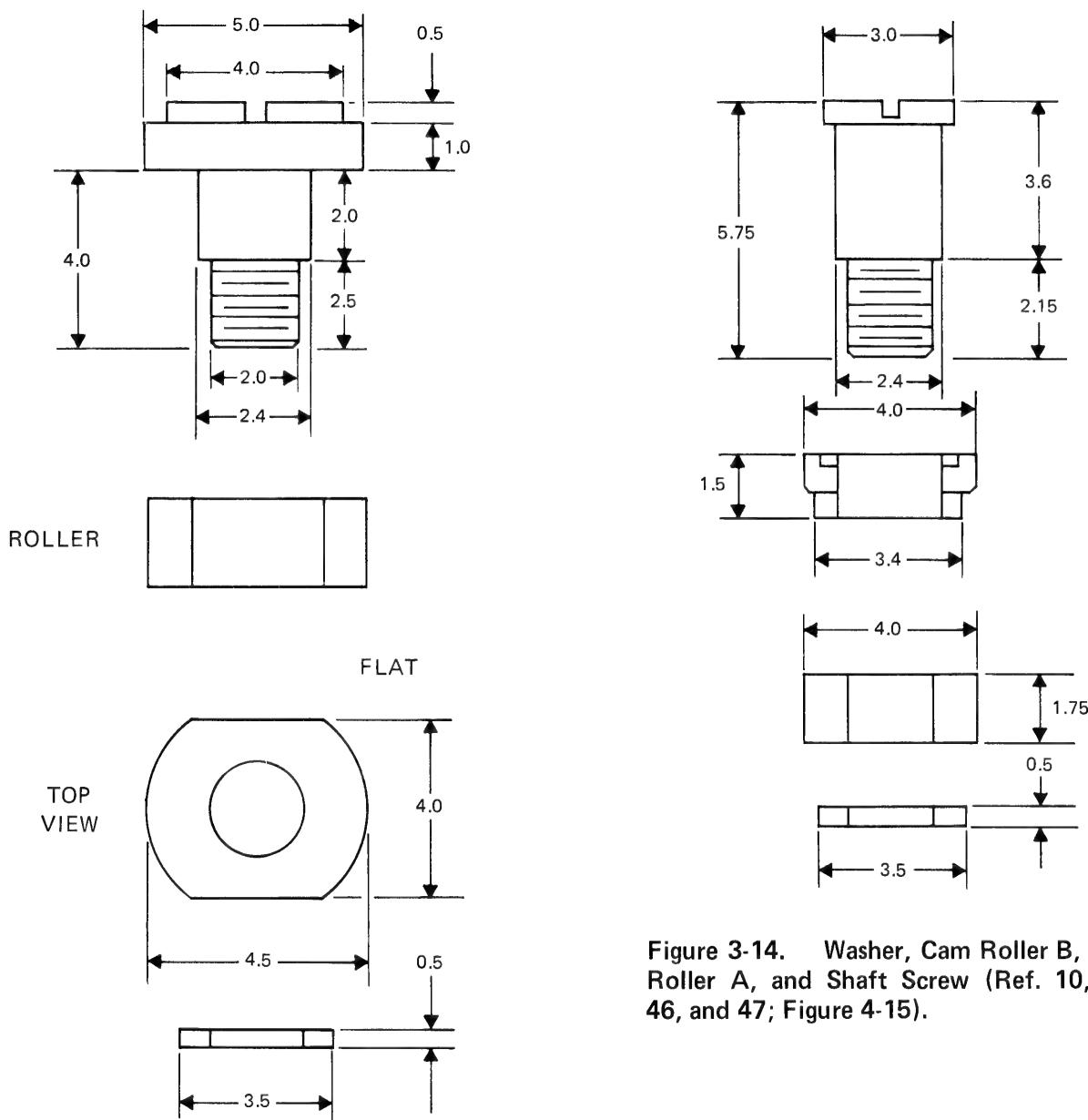


Figure 3-13. Guide Roller Washer, Guide Roller, and Shaft Screw (Ref. 10, 11, and 12; Figure 4-1).

Figure 3-14. Washer, Cam Roller B, Cam Roller A, and Shaft Screw (Ref. 10, 45, 46, and 47; Figure 4-15).

SECTION 4

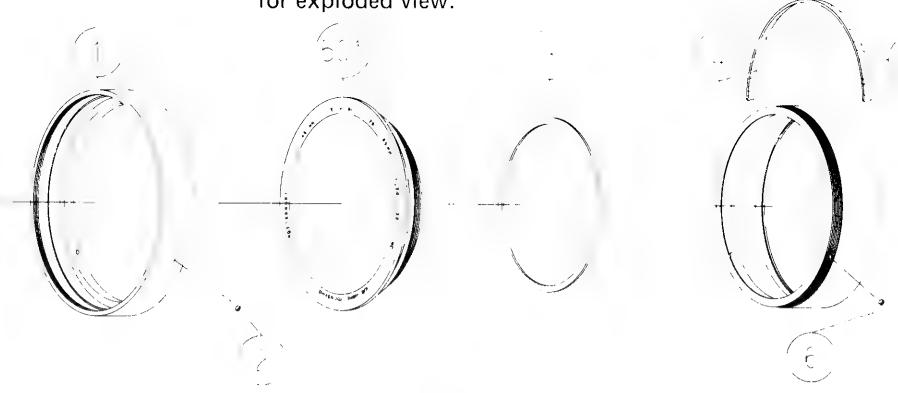
ILLUSTRATED PARTS LIST

The Illustrated Parts List consists of exploded view drawings of all the configurations of the lens. Facing each drawing, or on the same page, is a parts list keyed to the drawing by reference numbers and providing part numbers, descriptions, and quantities for each part. Availability of parts is indicated by footnotes.

At the end of the section is a complete parts list in Vivitar part number sequence which shows the quantities for each usage of each part in the various configurations of the lens.

**Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8**

See Figure 4-15
for exploded view.



See Figure 4-17
for exploded view.

See Figure 4-19
for exploded view.

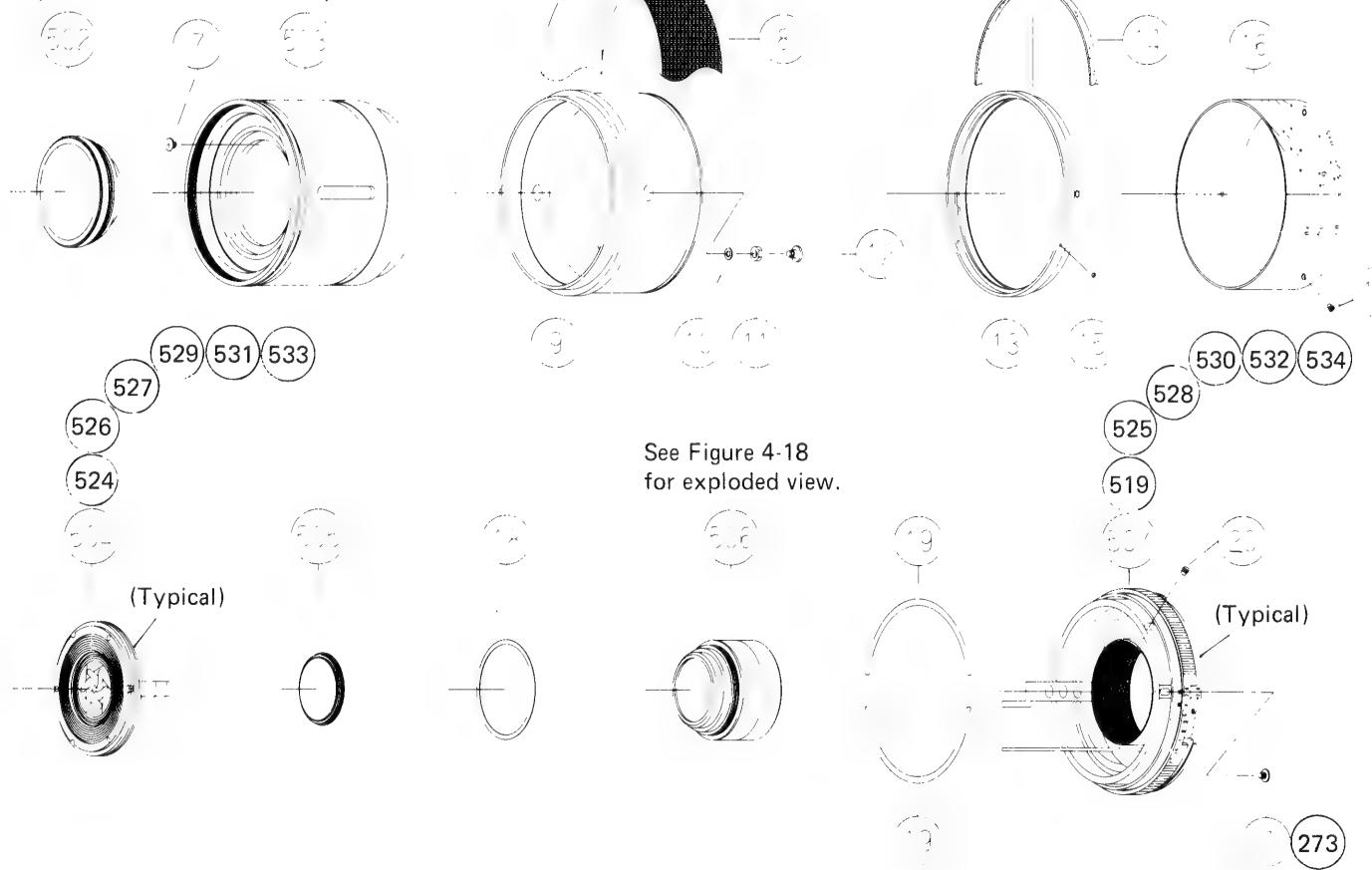


Figure 4-1. Assemblies and Parts Common To All Mount Configurations

Parts List for Figure 4-1. Assemblies and Parts Common To All Mount Configurations

Ref.	Vivitar Part No.	Description	Quantity							Part Code
			N	M	C	K	O	P	Y	
1	3107433	RING, FILTER	1	1	1	1	1	1	1	V54001 800417
2	3512981	SETSCREW, 1.7x3.0	3	3	3	3	3	3	3	Z85907B 760615
3	3107434	SHIM, 85mm FOCUS, 1.0	---As Required---							K54905 800110
3	3107434-1	SHIM, 85mm FOCUS, 0.5	---As Required---							K54906 800110
3	3107434-2	SHIM, 85mm FOCUS, 0.2	---As Required---							K54907 800110
3	3107434-3	SHIM, 85mm FOCUS, 0.15	---As Required---							K54908 800110
3	3107434-4	SHIM, 85mm FOCUS, 0.1	---As Required---							K54909 800110
4	3107435	RING, COWLING	1	1	1	1	1	1	1	V54003 800417
5	3107436	SEAL, FELT	1	1	1	1	1	1	1	K54924 800110
6	3513714	SETSCREW, 1.7x2.0	3	3	3	3	3	3	3	Z75902B 760520
7	3105399	SCREW, PANHD, 1.7x2.5x4.0	4	4	4	4	4	4	4	K17900B 790203
8	3107437	GRIP, CONTROL RING	1	1	1	1	1	1	1	V54015 800417
9	3107438	RING, ZOOM/FOCUS CONTROL	1	1	1	1	1	1	1	V54004 800417
10	3104698	WASHER, CAM SLOT ROLLER	5	5	5	5	5	5	5	K80935 771115
11	3107439	ROLLER, CAM SLOT GUIDE	2	2	2	2	2	2	2	K54900 800110
12	3107440	SCREW, SHAFT, GUIDE ROLLER	2	2	2	2	2	2	2	K54901 800110
13	3107441	RING, INDEX	1	1	1	1	1	1	1	V54005 800417
14	3107442	SEAL, FELT	1	1	1	1	1	1	1	K54925 800110
15	3512976	SETSCREW, 1.4x1.5	3	3	3	3	3	3	3	Z75905B 760520
16	3107443	RING, SCALE	1	1	1	1	1	1	1	V54006 800417
17	3513859	SCREW, FLTHD, 1.4x2.5	3	6	6	6	3	6	3	Z75963B 760520
18	3107444	RING, SHIM, FIELD FLATTENER	1	1	1	1	1	1	1	K54910 800110
19	3107445	SHIM, REAR FOCUS, 1.0	---As Required---							K54916 800110
19	3107445-1	SHIM, REAR FOCUS, 0.5	---As Required---							K54917 800110
19	3107445-2	SHIM, REAR FOCUS, 0.2	---As Required---							K54918 800110
19	3107445-3	SHIM, REAR FOCUS, 0.15	---As Required---							K54919 800110
19	3107445-4	SHIM, REAR FOCUS, 0.1	---As Required---							K54920 800110
20	3102855	SCREW, STOP	1	1	1	1	1	1	1	V82905 770718
273	3104828	SCREW, PANHD, 1.7x3.0x4.0	4	4	4	4	4	4	4	K24969B 770720
501	3107531	FIRST LENS GROUP ASSY	1	1	1	1	1	1	1	V54N81N 800909
502	3107532	SECOND LENS GROUP ASSY	1	1	1	1	1	1	1	K54N82N 800521
503	3107533	HELICOID ASSY	1	1	1	1	1	1	1	K54N41N 800630
504	3107534	DIAPHRAGM HOUSING ASSY, NIKON	1							K54N31N 800630
505	3107535	THIRD LENS GROUP ASSY	1	1	1	1	1	1	1	K54N83N 800521
506	3107536	FOURTH LENS GROUP ASSY	1	1	1	1	1	1	1	K54N84N 800521
507	3107537	MOUNT ASSY, NIKON	1							V54N21N 800909
516	3107545	DIAPHRAGM HOUSING ASSY, CANON		1						K54C31N 800630
519	3107548	MOUNT ASSY, CANON		1						V54C21N 800909
524	3107551	DIAPHRAGM HOUSING ASSY, OLYMPUS			1					K54O31N 800630
525	3107552	MOUNT ASSY, OLYMPUS			1					V54O21N 800909
527	3107553	DIAPHRAGM HOUSING ASSY, MINOLTA	1							K54M31N 800630
528	3107554	MOUNT ASSY, MINOLTA	1							V54M21N 800909
529	3107555	DIAPHRAGM HOUSING ASSY, PENTAX			1					K54P31N 800630
530	3107556	MOUNT ASSY, PENTAX			1					V54P21N 800909
531	3109996	DIAPHRAGM HOUSING ASSY, Y/C				1				K54Y31N 810210
532	3109997	MOUNT ASSY, Y/C					1			V54Y21N 810210
533	3109998	DIAPHRAGM HOUSING ASSY, KONICA				1				K54K31N 810210
534	3109999	MOUNT ASSY, KONICA				1				V54K21N 810210

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

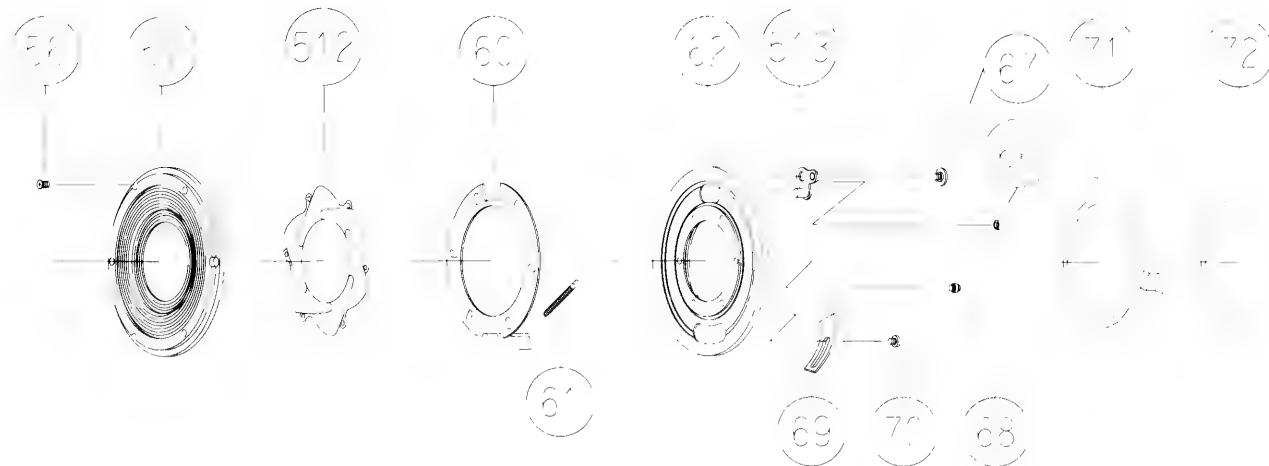


Figure 4-2. Nikon Diaphragm Housing Assembly (Ref. 504)

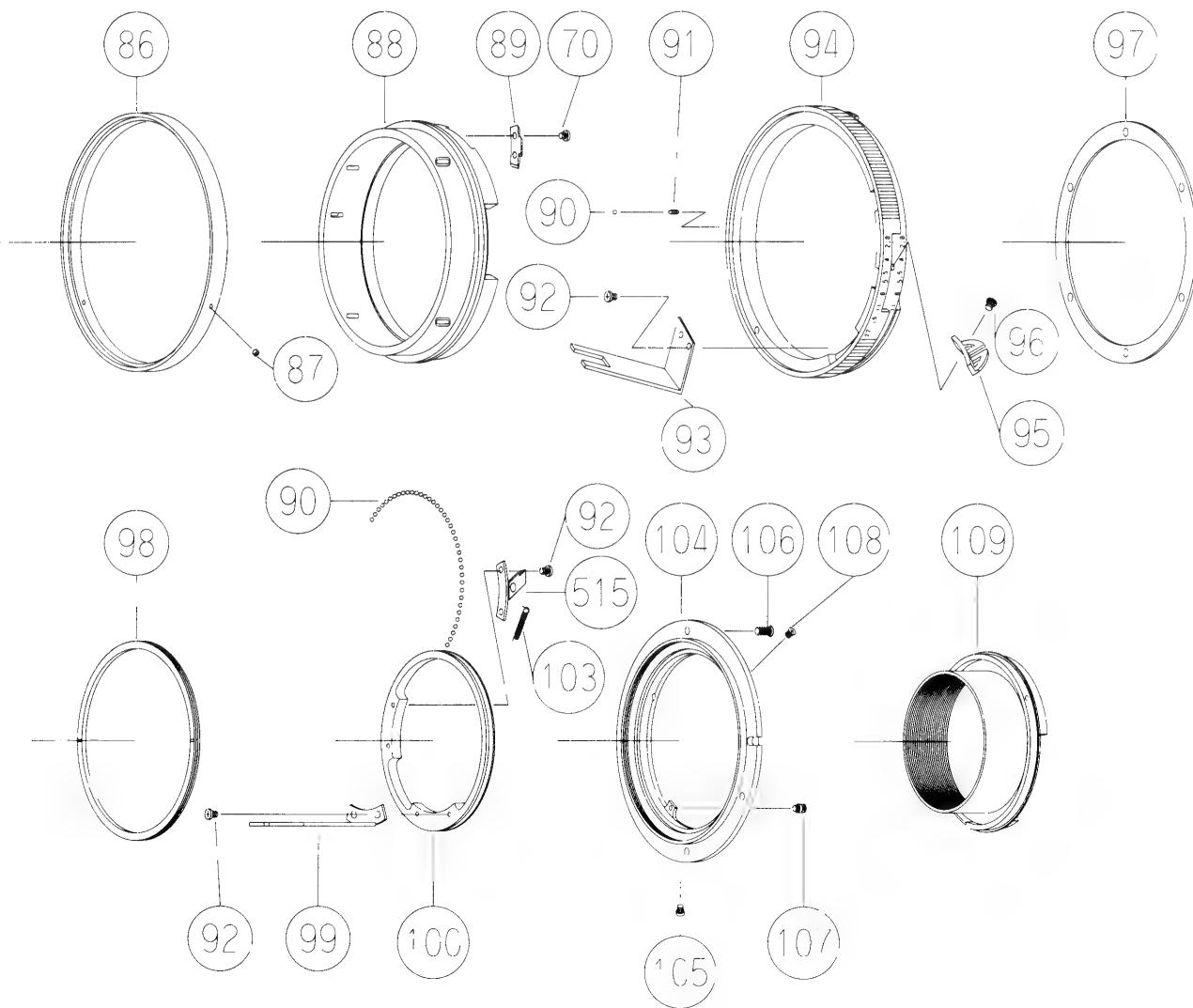


Figure 4-3. Nikon Mount Assembly (Ref. 507)

Parts List for Figure 4-2. Nikon Diaphragm Housing Assembly (Ref. 504)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
56	3107468	SCREW, FLTHD, 1.4x3.0	3	Z75968B 760520
57	3107469	RING, BLADE, RTNG	1	K54017 800110
60	3107470	RING, BLADE OPERATING	1	K54702 800110
61	3107471	SPRING, COIL, TENSION	1	K54921 800110
62	3107472	HOUSING, DIAPHRAGM	1	K54019 800110
66	3107473	SLEEVE, THREADED	1	K54926 800110
67	3102867	SCREW, SHOULDER	1	V82904 770718
68	3105506	SCREW, SPRING POST	1	K17916 790203
69	3107474	PLATE, STOP	1	K54704 800110
70	3512984	SCREW, PANHD, 1.4x1.8	4	Z75922B 760520
71	3107475	CAM, APERTURE	1	K54705 800110
72	3102869	RING, RTNG, EXT	1	V82709 770718
512	3107542	BLADE ASSY, DIAPHRAGM	6	K54N61N 800630
513	3107543	CRANK, CAM FOLLOWER	1	K54N62N 800630

Parts List for Figure 4-3. Nikon Mount Assembly (Ref. 507)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B 760520
86	3107485	RING, APERTURE INDEX	1	V54007NB800417
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B 760520
88	3107486	FRAME, MOUNT	1	K54031 800110
89	3101487	LUG, STOP	1	V82711 770718
90	3512898	BALL, STEEL, 1.6	80	Z75919 760520
91	3512857	SPRING, DETENT, 1.5	1	Z75920 760520
92	3512990	SCREW, PANHD, 1.4x2.5	6	Z75952B 760520
93	3107488	FORK, APERTURE TRANSFER	1	K54707 800110
94	3107489	RING, APERTURE SETTING	1	V54008NB800417
95	3518107	FORK, METER COUPLING	1	Z75747 770520
96	3518108	SCREW, COUPLING FORK	1	Z15917 770520
97	3105415	SPACER, MOUNT, 0.5	1	V82755 790903
98	3101603	RING, BALL RTNG	1	V82015 770718
99	3107490	ARM, DIAPHRAGM TRANSFER	1	K54706 800110
100	3105417	RING, DIAPHRAGM TRANSFER	1	Z71012 780710
103	3104829	SPRING, COIL, TENSION	1	Z71915 790118
104	3101607	MOUNT, NIKON AI	1	V82017 770718
105	3512825-1	SCREW, MOUNT STOP, CHR	1	Z75934W 760520
106	3101608	SCREW, PANHD, 1.7x4.5, CHR	5	V82909W 770718
107	3512835	SCREW, SPRING POST	1	Z75914 760520
108	3513901	SCREW, FLTHD, 1.4x2.5, CHR	2	Z75963W 760520
109	3107491	PIPE, SHADE	1	K54033 800110
515	3103020	ARM, DIAPHRAGM COUPLING	1	V42F87N 770718

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

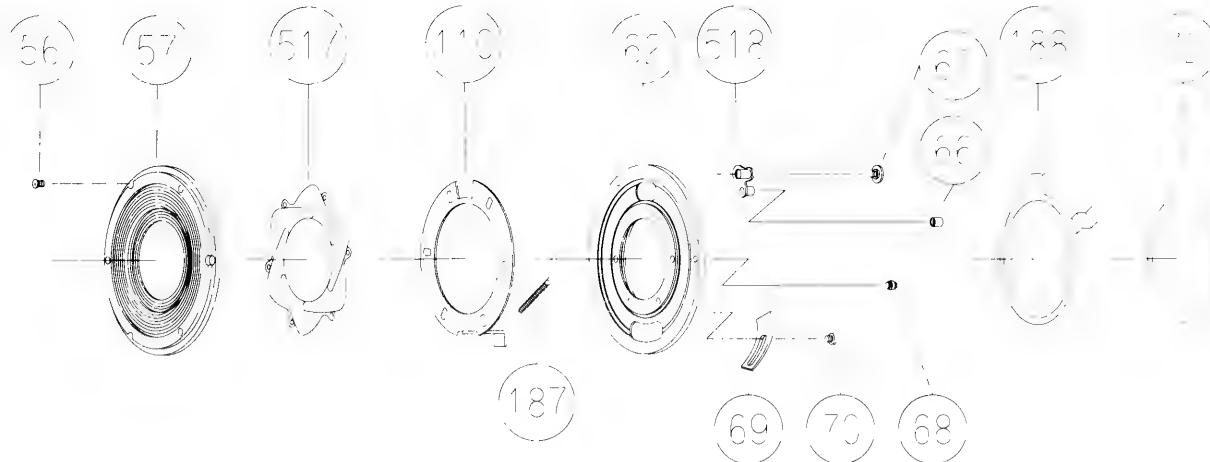


Figure 4-4. Minolta Diaphragm Housing Assembly (Ref. 527)

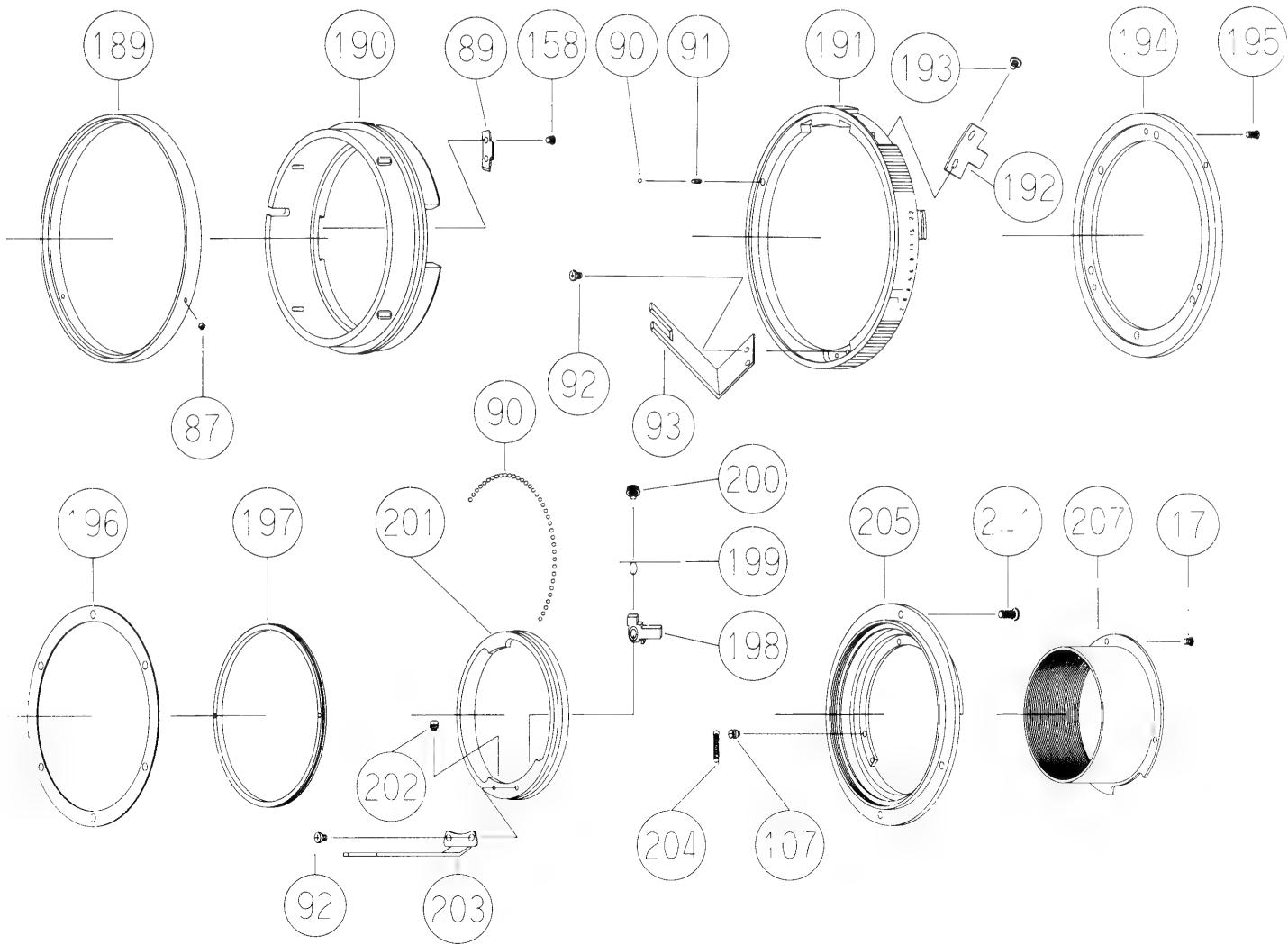


Figure 4-5. Minolta Mount Assembly (Ref. 528)

Parts List for Figure 4-4. Minolta Diaphragm Housing Assembly (Ref. 527)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
56	3107468	SCREW, FLTHD, 1.4x3.0	3	Z75968B 760520
57	3107469	RING, BLADE, RTNG	1	K54017 800110
62	3107472	HOUSING, DIAPHRAGM	1	K54019 800110
66	3107473	SLEEVE, THREADED	1	K5426 800110
67	3102867	SCREW, SHOULDER	1	V82904 770718
68	3105506	SCREW, SPRING POST	1	K17916 790203
69	3107474	PLATE, STOP	1	K54704 800110
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B 760520
72	3102869	RING, RTNG, EXT	1	V82709 770718
110	3107492	RING, BLADE OPERATING	1	K54708 800110
187	3107510	SPRING, COIL, TENSION	1	K54923 800110
188	3107511	CAM, APERTURE	1	K54717 800110
517	3107546	BLADE ASSY, DIAPHRAGM	6	K54C61N 800630
518	3107547	CRANK, CAM FOLLOWER	1	K54C62N 800630

Parts List for Figure 4-5. Minolta Mount Assembly (Ref. 528)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
17	3513859	SCREW, FLTHD, 1.4x2.5	6	Z75963B 760520
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B 760520
89	3107487	LUG, STOP	1	V82711 770718
90	3512898	BALL, STEEL, 1.6	1	Z75919 760520
91	3512857	SPRING, DETENT, 1.5	1	Z75920 760520
92	3512990	SCREW, PANHD, 1.4x2.5	4	Z75952B 760520
93	3107488	FORK, APERTURE TRANSFER	1	K54707 800110
107	3512835	SCREW, SPRING POST	1	Z75914 760520
158	3107504	SCREW, PANHD, 1.4x1.8, BLK	4	Z75926B 760520
189	3107512	RING, APERTURE INDEX	1	V54007MB800417
190	3107513	FRAME, MOUNT	1	K54041 800110
191	3107514	RING, APERTURE SETTING	1	V54011MB800417
192	3103044	LUG, S-PREFERRED COUPLING	1	Z75994 771215
193	3101632	SCREW, PANHD, 1.4x2.3	2	Z15921B 771215
194	3102960	RING, INTERMEDIATE MOUNTING	1	V82061 770718
195	3102961	SCREW, FLTHD, 1.4x4.0	3	K90910B 761210
196	3104736	SPACER, MOUNT, 0.5	1	K80741 780921
197	3102964	RING, BALL RTNG	1	K24021 770720
198	3102968	ARM, DIAPHRAGM COUPLING	1	V82745 770718
199	3102969	SPRING, WIRE, DIAPHRAGM ARM	1	V82936 770718
200	3102970	SCREW, SPRING RTNG	1	V82935 770718
201	3102965	RING, DIAPHRAGM TRANSFER	1	V82062 770718
202	3107516	SCREW, SPRING POST	1	V25932 760817
203	3107517	ARM, DIAPHRAGM TRANSFER	1	K54718 800110
204	3102967	SPRING, COIL, TENSION, 2.0x5.0	1	V82937 770718
205	3102971	MOUNT, M/MD	1	V82063 770718
207	3107518	PIPE, SHADE	1	K54043 800110
241	3518091	SCREW, PANHD, 1.7x4.9, CHR	5	Z75985W 760520

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

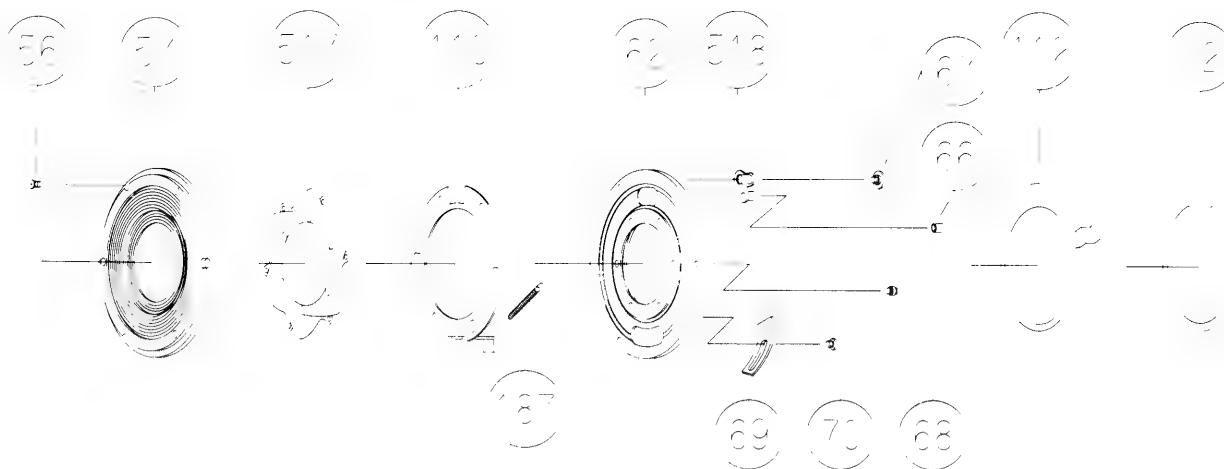


Figure 4-6. Canon Diaphragm Housing Assembly (Ref. 516)

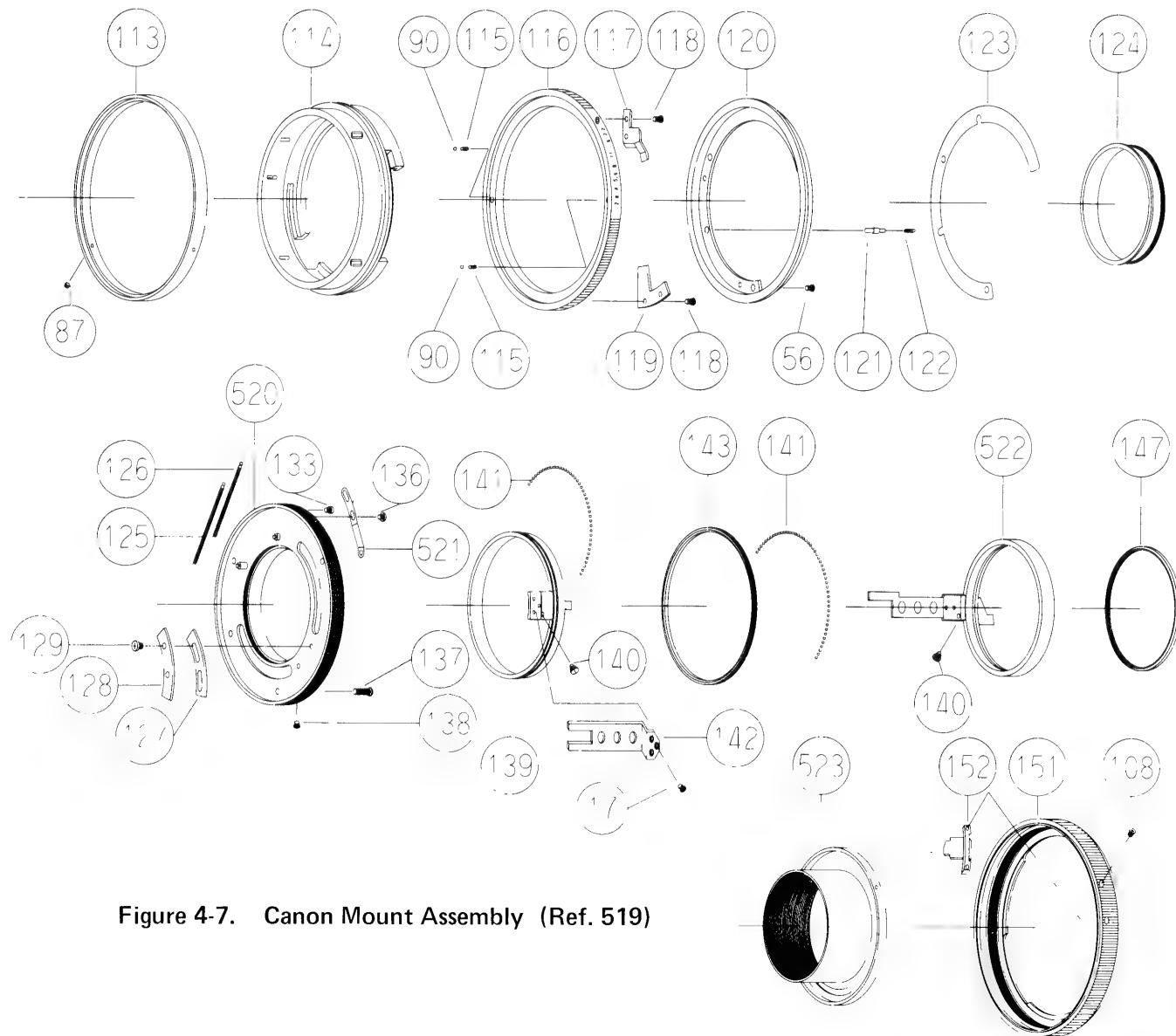


Figure 4-7. Canon Mount Assembly (Ref. 519)

Parts List for Figure 4-6. Canon Diaphragm Housing Assembly (Ref. 516)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
56	3107468	SCREW, FLTHD, 1.4x3.0	3	Z75968B 760520
57	3107469	RING, BLADE, RTNG	1	K54017 800110
62	3107472	HOUSING, DIAPHRAGM	1	K54019 800110
66	3107473	SLEEVE, THREADED	1	K54926 800110
67	3102867	SCREW, SHOULDER	1	V82904 770718
68	3105506	SCREW, SPRING POST	1	K17916 790203
69	3107474	PLATE, STOP	1	K54704 800110
70	3512984	SCREW, PANHD, 1.4x1.8	8	Z75922B 760520
72	3102869	RING, RTNG, EXT	1	V82709 770718
110	3107492	RING, BLADE OPERATING	1	K54708 800110
112	3107493	CAM, APERTURE	1	K54710 800110
187	3107510	SPRING, COIL, TENSION	1	K54923 800110
517	3107546	BLADE ASSY, DIAPHRAGM	6	K54C61N 800630
518	3107547	CRANK, CAM FOLLOWER	1	K54C62N 800630

Parts List for Figure 4-7. Canon Mount Assembly (Ref. 519)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
17	3513859	SCREW, FLTHD, 1.4x2.5	6	Z75963B 760520
56	3107468	SCREW, FLTHD, 1.4x3.0	6	Z75968B 760520
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B 760520
90	3512898	BALL, STEEL, 1.6	80	Z75919 760520
108	3513901	SCREW, FLTHD, 1.4x2.5, CHR	2	Z75963W 760520
113	3107494	RING, APERTURE INDEX	1	V54007CB800417
114	3107495	FRAME, MOUNT	1	K54034 800110
115	3104843	SPRING, DETENT, 1.5	2	Z75956 760520
116	3107496	RING, APERTURE SETTING	1	V54009CB800417
117	3101527	LUG, EE SIGNAL	1	K24725 770720
118	3513725	SCREW, PANHD, 1.4x2.8, BLK	4	Z85910B 760615
119	3101528	LUG, APERTURE TRANSFER	1	K24724 770720
120	3107497	RING, INTERMEDIATE MOUNTING	1	V82027 770718
121	3101530	PIN, EE SIGNAL	1	K24820 770720
122	3512850	SPRING, EE SIGNAL PIN	1	Z75940 760520
123	3104743	SPACER, MOUNT, 0.5	1	K80740 780921
124	3102882	RING, SHIELD	1	V82030 770718
125	3102918	SPRING, COIL, TENSION, 1.5x38.0	1	V82947 770718
126	3101540	SPRING, COIL, TENSION, 1.5x38.0	1	K24952 770710
127	3101538	PLATE, STOP, DIAPHRAGM ACTUATOR	1	K24726 770720
128	3101539	PLATE, STOP, APERTURE SETTING	1	K24727 770720
129	3101494	SCREW, PANHD, 1.7x2.0	2	K24925B 770720
133	3512825	SCREW, MOUNT STOP, BLK	1	Z75934B 760520
136	3104831	SCREW, PANHD, 1.4x1.5, CHR	2	Z15918W 770606
137	3101541	SCREW, PANHD, 1.4x2.0	3	K24957B 770720
138	3512974	SCREW, FLTHD, 1.4x2.0	3	Z75912B 760520
139	3107498	RING, APERTURE TRANSFER	1	K54036 800110
140	3101543	SCREW, SPRING POST	2	K24951 770720
141	3512899	BALL, STEEL, 1.2	200	Z75941 760520
142	3107499	FORK, APERTURE TRANSFER	1	K54712 800110
143	3101544	RING, BALL RTNR, OUTER	1	K24041 770720
147	3101545	RING, BALL RTNR, INNER	1	K24042 770720
151	3101547	RING, BREECHLOCK	1	K24043 770720
152	3101546	PLATE, STOP, BREECHLOCK	1	K24731 770720
520	3103009	MOUNT, CANON	1	V42C88N 770718
521	3103010	SPRING, BREECHLOCK CATCH	1	K24C64N 770720
522	3107549	RING, DIAPHRAGM TRANSFER	1	K54C51N 800630
523	3107550	PIPE, SHADE	1	K54C52N 800630

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

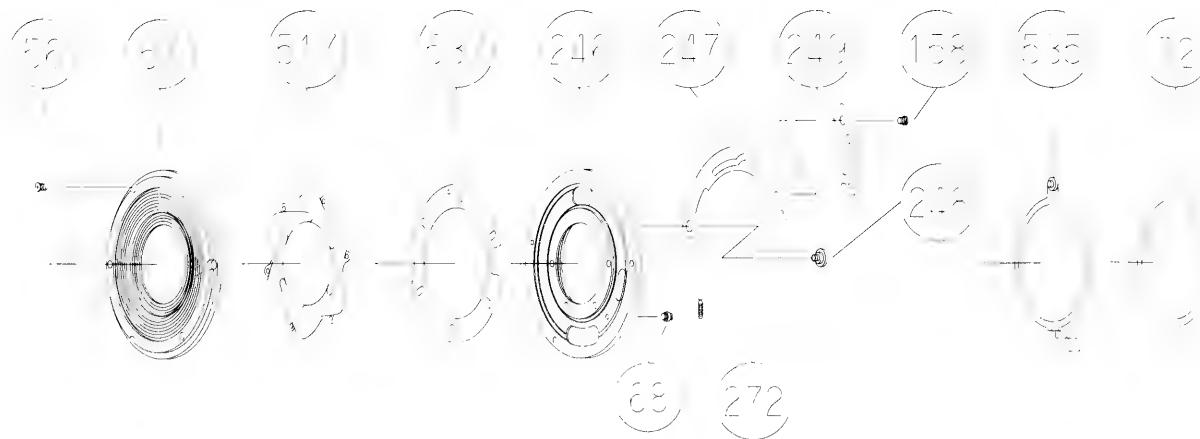


Figure 4-8. Konica Diaphragm Housing Assembly (Ref. 533)

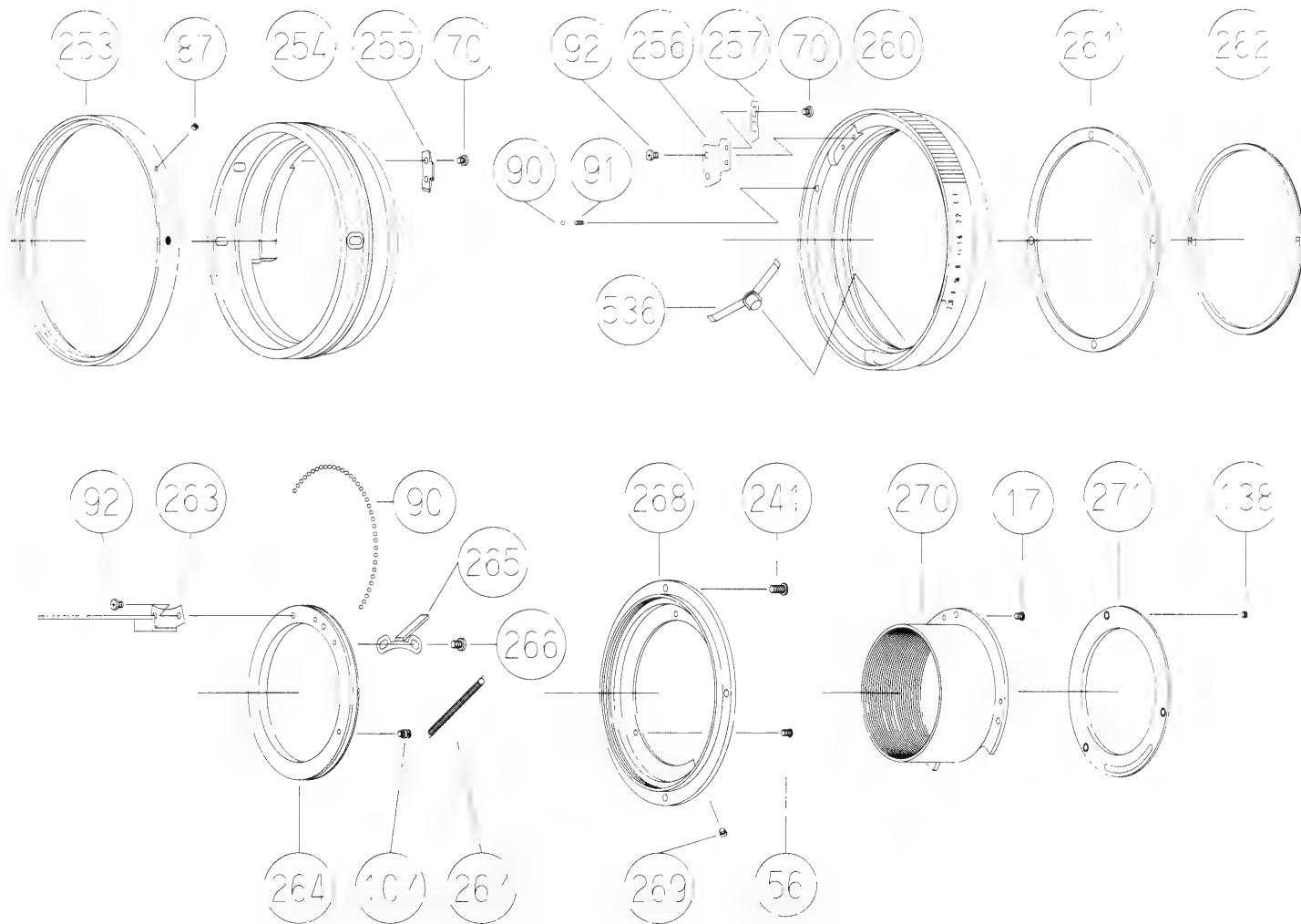


Figure 4-9. Konica Mount Assembly (Ref. 534)

Parts List for Figure 4-8. Konica Diaphragm Housing Assembly

Ref.	Vivitar Part No.	Description	Quantity	Part Code
56	3107468	SCREW, FLTHD, 1.4x3.0	4	Z75968B 760520
57	3107469	RING, BLADE, RTNG	1	K54017 800110
68	3105506	SCREW, SPRING POST	1	K17916 790203
72	3102869	RING, RTNG, EXT	1	V82709 770718
158	3512986	SCREW, PANHD, 1.4x1.8x2.0	2	Z75926B 760520
246	3109984	HOUSING, DIAPHRAGM	1	K54060 810210
247	3109985	LEVER, APERTURE CAM	1	K54729 810210
248	3102953	SCREW, SHOULDER	1	V82930 770718
249	3109986	ARM, CAM LEVER EXTENSION	1	K54730 810210
272	3109913	SPRING, COIL, TENSION	1	K56915 810210
517	3109914	BLADE, DIAPHRAGM	6	K54C61 N800630
535	3110000	RING, APERTURE CAM COUPLING	1	K54K61 N810210
537	3110001	RING, BLADE OPERATING	1	K54K62 N810210

Parts List for Figure 4-9. Konica Mount Assembly

Ref.	Vivitar Part No.	Description	Quantity	Part Code
17	3513859	SCREW, FLTHD, 1.4x2.5	6	Z75963B 760520
56	3107468	SCREW, FLTHD, 1.4x3.0	4	Z75968B 760520
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B 760520
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B 760520
90	3512898	BALL, STEEL, 1.6	80	Z75919 760520
91	3512857	SPRING, DETENT, 1.5	1	Z75920 760520
92	3512990	SCREW, PANHD, 1.4x2.5	4	Z75952B 760520
107	3512835	SCREW, SPRING POST	1	Z75914 760520
138	3512974	SCREW, FLTHD, 1.4x2.0	3	Z75912B 760520
241	3518091	SCREW, PANHD, 1.7x4.9, CHR	4	Z75985W 760520
253	3109987	RING, APERTURE INDEX	1	V54017KB810615
254	3109988	FRAME, MOUNT	1	K54057 810210
255	3105787	PLATE, STOP	1	Z71717 780710
256	3109919	LUG, APERTURE LIMIT STOP	1	K53709 810210
257	3109920	PLATE, APERTURE LIMIT STOP	1	K53710 810210
260	3109989	RING, APERTURE SETTING	1	V54018KB810615
261	3105973	SPACER, MOUNT, 0.5	1	V82758 790903
262	3102943	RING, BALL RTNG	1	V82052 770718
263	3109990	ARM, DIAPHRAGM TRANSFER	1	K54727 810210
264	3102944	RING, DIAPHRAGM TRANSFER	1	V82053 770718
265	3102947	ARM, DIAPHRAGM COUPLING	1	V82737 770718
266	3512980	SCREW, PANHD, 1.7x3.0x3.0	2	Z75913B 760520
267	3512885	SPRING, COIL, TENSION, 2.5x7.0	1	Z75957 760520
268	3102948	MOUNT, KONICA	1	V82054 780801
269	3512891	SCREW, MOUNT STOP	1	Z75961 760520
270	3109991	PIPE, SHADE	1	K56053 810210
271	3109992	RING, REAR PROTECTIVE	1	K54061 810210
536	3103023	BUTTON/SPRING, EE LATCH	1	V42K85 N770718

**Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8**

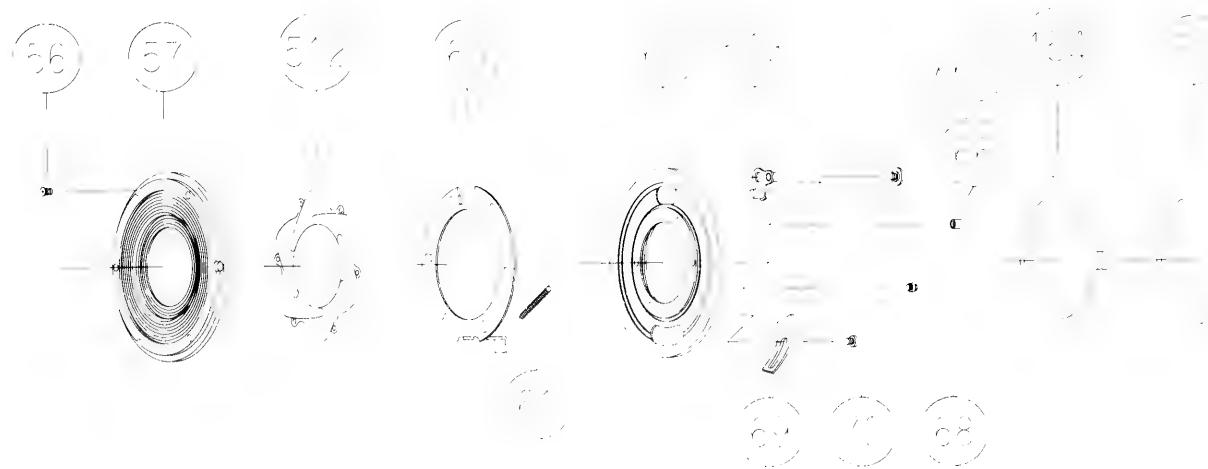


Figure 4-10. Olympus Diaphragm Housing Assembly (Ref. 524)

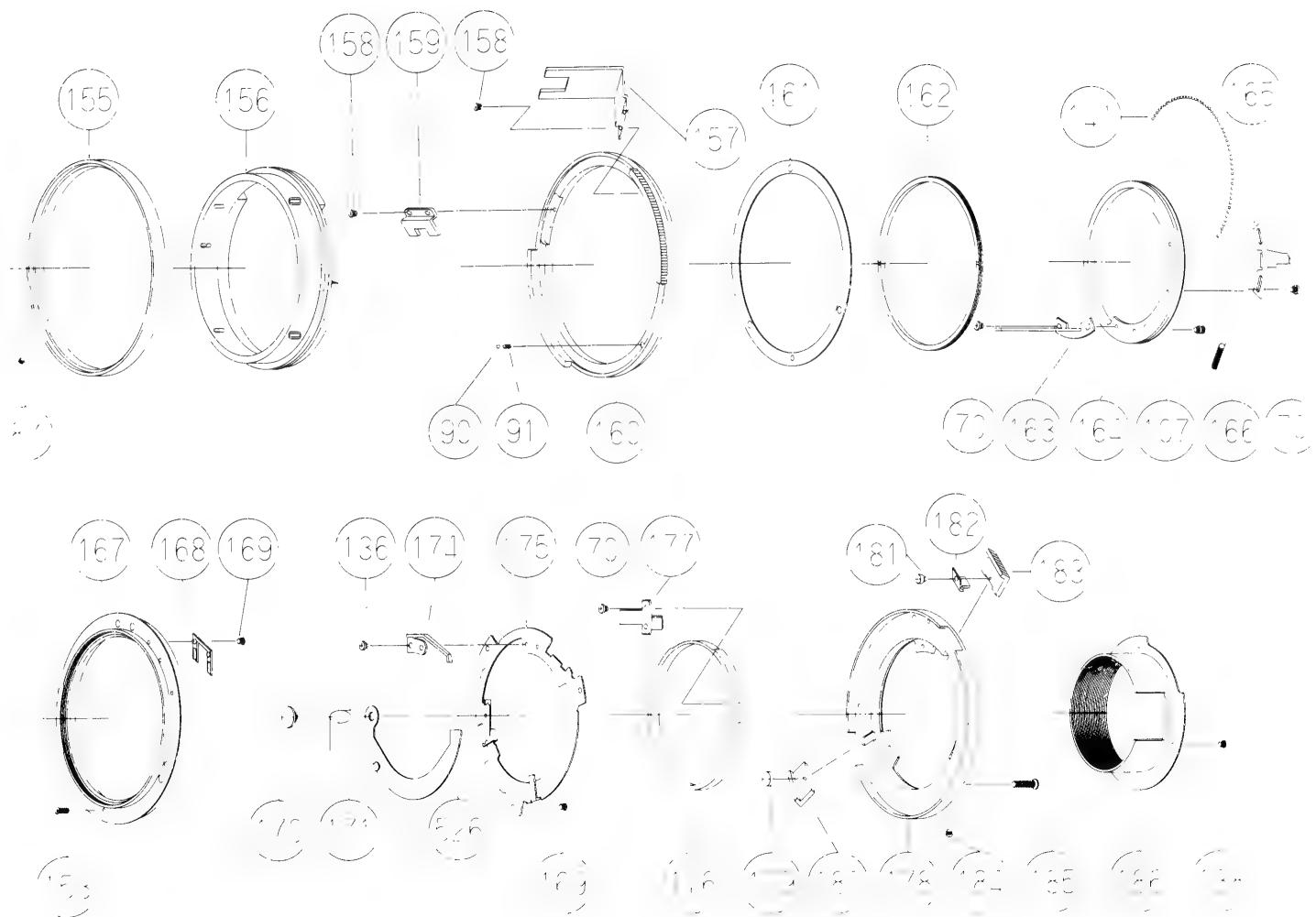


Figure 4-11. Olympus Mount Assembly (Ref. 525)

Parts List for Figure 4-10. Olympus Diaphragm Housing Assembly (Ref. 524)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
56	3107468	SCREW, FLTHD, 1.4x3.0	3	Z75968B 760520
57	3107469	RING, BLADE, RTNG	1	K54017 800110
60	3107470	RING, BLADE OPERATING	1	K54702 800110
61	3107471	SPRING, COIL, TENSION	1	K54921 800110
62	3107472	HOUSING, DIAPHRAGM	1	K54019 800110
66	3107473	SLEEVE, THREADED	1	K54926 800110
67	3102867	SCREW, SHOULDER	1	V82904 770718
68	3105506	SCREW, SPRING POST	1	K17916 790203
69	3107474	PLATE, STOP	1	K54704 800110
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B 760520
72	3102869	RING, RTNG, EXT	1	V82709 770718
154	3107500	CAM, APERTURE	1	K54713 800110
512	3107542	BLADE, ASSY, DIAPHRAGM	6	K54N61N 800630
513	3107543	CRANK, CAM FOLLOWER	1	K54N62N 800630

Parts List for Figure 4-11. Olympus Mount Assembly (Ref. 525)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
70	3512984	SCREW, PANHD, 1.4x1.8	8	Z75922B 760520
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B 760520
90	3512898	BALL, STEEL, 1.6	2	Z75919 760520
91	3512857	SPRING, DETENT, 1.5	1	Z75920 760520
107	3512835	SCREW, SPRING POST	1	Z75914 760520
136	3104831	SCREW, PANHD, 1.4x1.5, CHR	2	Z15918W 770606
138	3512974	SCREW, FLTHD, 1.4x2.0	3	Z75912B 760520
141	3512899	BALL, STEEL, 1.2	112	Z75941 760520
153	3101560	SCREW, FLTHD, 1.4x5.0	3	K24963W 770720
155	3107501	RING, APERTURE INDEX	1	V54007OB800417
156	3107502	FRAME, MOUNT	1	K54038 800110
157	3107503	FORK, APERTURE TRANSFER	1	K54715 800110
158	3107504	SCREW, PANHD, 1.4x1.8, BLK	2	Z75926B 760520
159	3107505	LUG, APERTURE TRANSFER	1	K54722 800110
160	3107506	RING, APERTURE SETTING	1	V54010OB800417
161	3101553	RING, MOUNT SPACER, 0.5	1	K24964 770720
162	3101557	RING, BALL RTNR	1	K24047 770720
163	3107507	ARM, DIAPHRAGM TRANSFER	1	K54714 800110
164	3105771	RING, DIAPHRAGM TRANSFER	1	Z71027 780740
165	3105772	ARM, DIAPHRAGM COUPLING	1	Z71722 780710
166	3105773	SPRING, COIL, TENSION	1	Z71905 790514
167	3101561	RING, MOUNT COVER	1	K24049 770720
168	3105434	FORK, LATCH BUTTON RTNG	1	K24756 780303
169	3514089	SCREW, FLTHD, 1.4x2.0, CHR	5	Z75912W 760520
170	3101562	SCREW, PIVOT POST	1	K24958 770720
171	3101563	SPRING, WIRE, MANUAL LEVER	1	K24962 770720
174	3101564	SPRING, LEAF, LOCK RELEASE	1	K24737 770720
175	3101565	PLATE, MOUNTING	1	K24739 770720
176	3101567	RING, APERTURE TRANSFER	1	K24050 770720
177	3107508	ARM, APERTURE COUPLING	1	K54716 800110
178	3101572	MOUNT, OLYMPUS	1	K24051 770720
179	3101568	SCREW, MANUAL BUTTON	1	K24960 770720
180	3101569	BUTTON, MANUAL, CHR	1	Z15808 780314
181	3101570	SCREW, LOCK PLATE	1	K24959 770720
182	3512931	PLATE, MOUNT LOCKING	1	Z75741 760520
183	3101571	BUTTON, LOCK RELEASE, CHR	1	Z15807 780314
184	3106563	SCREW, MOUNT STOP	1	K24979 780206
185	3101573-1	SCREW, PANHD, 1.7x8.0, CHR	3	K24968W 770720
186	3107509	PIPE, SHADE	1	K54040 800110
526	3105474	LEVER, MANUAL DIAPHRAGM	1	Z71053N 790410

**Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8**

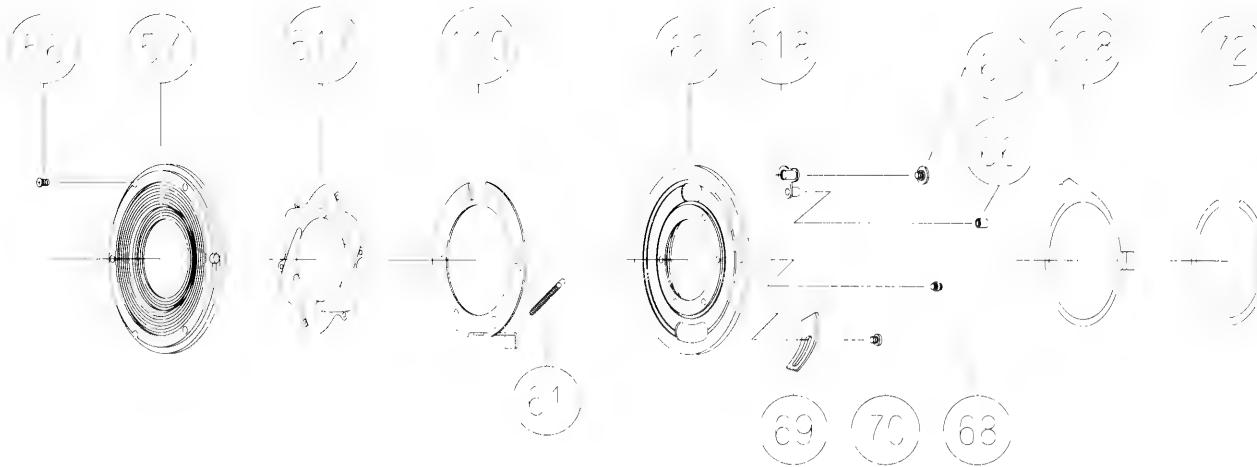


Figure 4-12. Pentax Diaphragm Housing Assembly (Ref. 529)

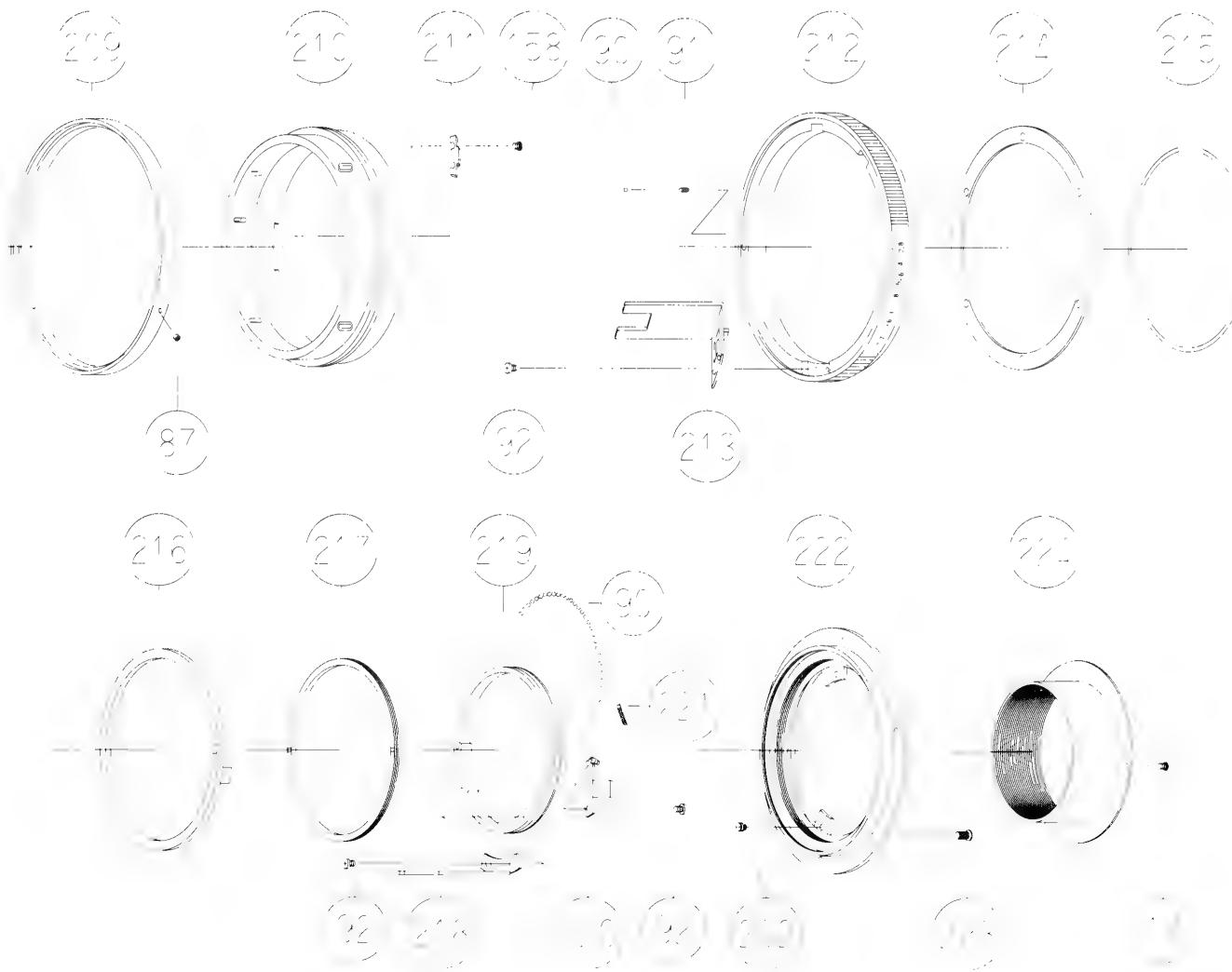


Figure 4-13. Pentax Mount Assembly (Ref. 530)

Parts List for Figure 4-12. Pentax Diaphragm Housing Assembly (Ref. 529)

Ref.	Vivitar Part No.	Description	Quantity	Part Code	
56	3107468	SCREW, FLTHD, 1.4x3.0	3	Z75968B	760520
57	3107469	RING, BLADE, RTNG	1	K54017	800110
61	3107471	SPRING, COIL, TENSION	1	K54921	800110
62	3107472	HOUSING, DIAPHRAGM	1	K54019	800110
66	3107473	SLEEVE, THREADED	1	K54926	800110
67	3102867	SCREW, SHOULDER	1	V82904	770718
68	3105506	SCREW, SPRING POST	1	K17916	790203
69	3107474	PLATE, STOP	1	K54704	800110
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B	760520
72	3102869	RING, RTNG, EXT	1	V82709	770718
110	3107492	RING, BLADE OPERATING	1	K54708	800110
208	3107519	CAM, APERTURE	1	K54719	800110
517	3107546	BLADE ASSY, DIAPHRAGM	6	K54C61N	800630
518	3107547	CRANK, CAM FOLLOWER	1	K54C62N	800630

Parts List for Figure 4-13. Pentax Mount Assembly (Ref. 530)

Ref.	Vivitar Part No.	Description	Quantity	Part Code	
17	3513859	SCREW, FLTHD, 1.4x2.5	6	Z75963B	760520
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B	760520
90	3512898	BALL, STEEL, 1.6	80	Z75919	760520
91	3512857	SPRING, DETENT, 1.5	1	Z75920	760520
92	3512990	SCREW, PANHD, 1.4x2.5	6	Z75952B	760520
158	3107504	SCREW, PANHD, 1.4x1.8, BLK	2	Z75926B	760520
202	3107516	SCREW, SPRING POST	1	V25932	760817
209	3107520	RING, APERTURE INDEX	1	V54007PB800417	
210	3107521	FRAME, MOUNT	1	K54044	800110
211	3102920	PLATE, STOP	1	V82732	770718
212	3107522	RING, APERTURE SETTING	1	V54012PB800417	
213	3107523	FORK, APERTURE TRANSFER	1	K54721	800110
214	3105448	SPACER, MOUNT, 0.5	1	V82757	790903
215	3101586	RING, RTNG, INT	1	K24753	770720
216	3107524	RING, APERTURE COUPLING	1	K54051	800110
217	3102926	RING, BALL RTNG	1	K24062	770720
218	3107525	ARM, DIAPHRAGM TRANSFER	1	K54720	800110
219	3107526	RING, DIAPHRAGM TRANSFER	1	K54046	800110
220	3102929	ARM, DIAPHRAGM COUPLING	1	V82729	770718
221	3102928	SPRING, COIL, TENSION, 2.0x8.0	1	V82929	770718
222	3102930	MOUNT, P/K, M	1	K24061	780912
223	3107527	SCREW, PANHD, 1.7x4.0, CHR	5	V25923W	760817
224	3107528	PIPE, SHADE	1	K54047	800110

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

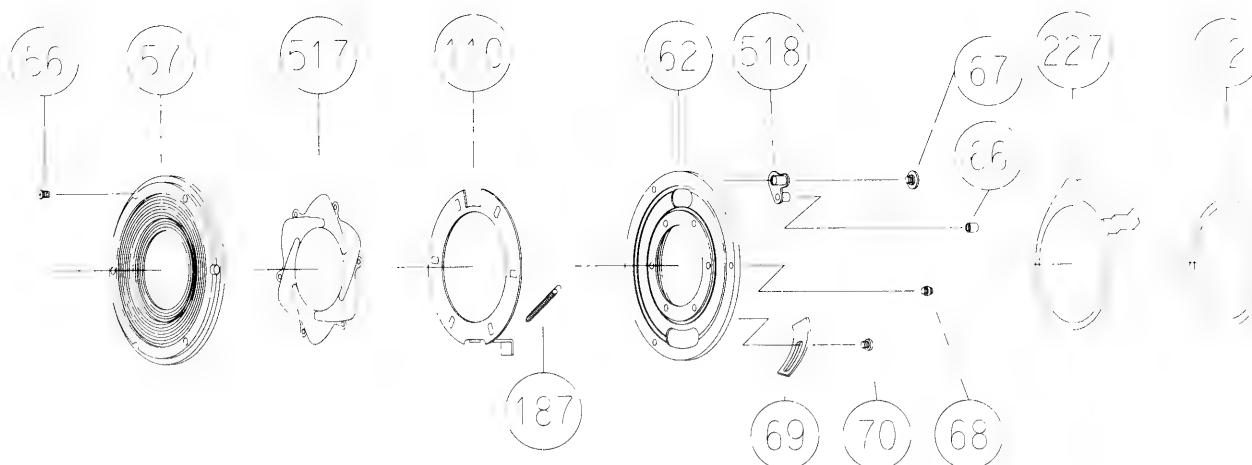


Figure 4-14. Yashica/Contax Diaphragm Housing Assembly (Ref. 531)

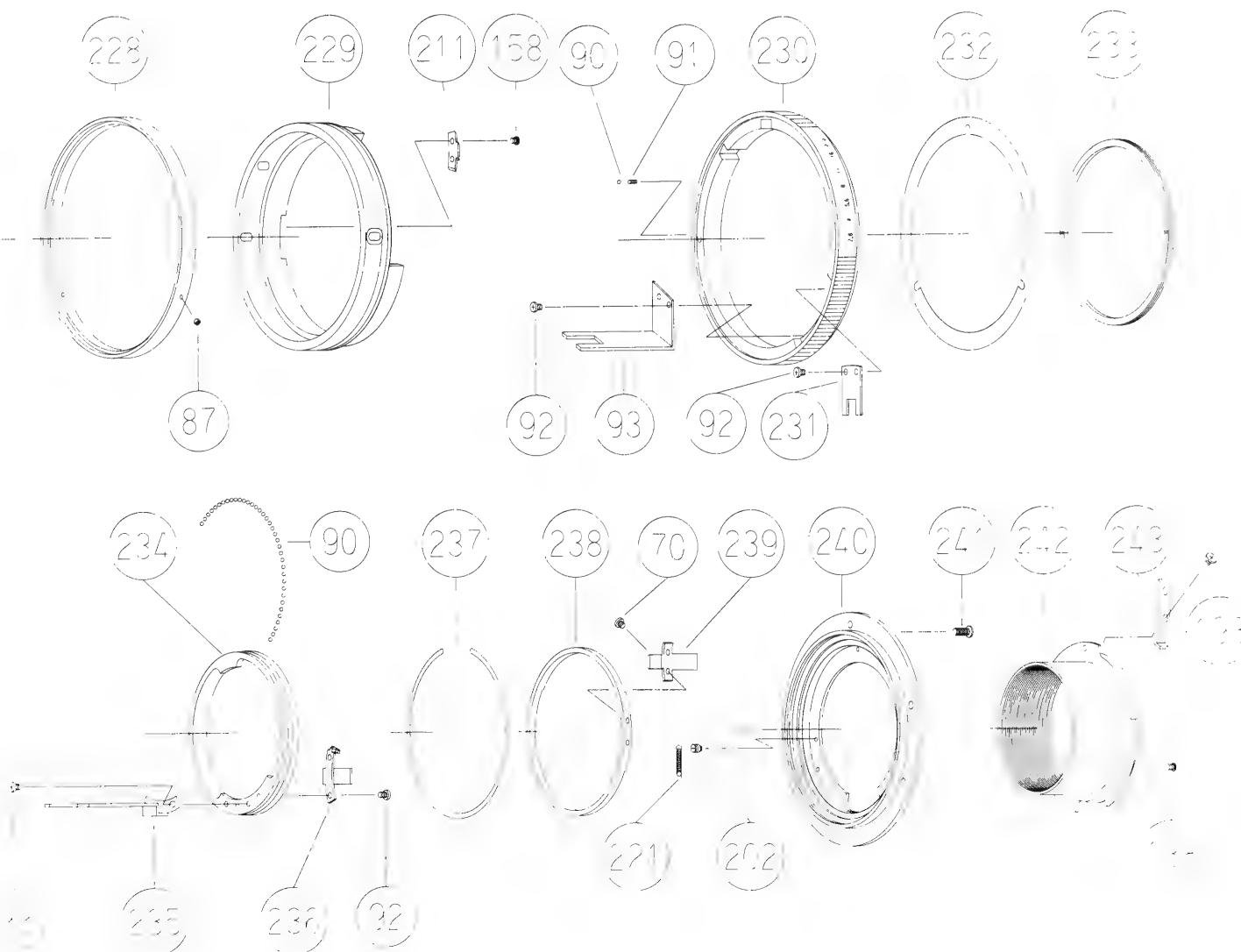


Figure 4-15. Yashica/Contax Mount Assembly (Ref. 532)

Parts List for Figure 4-14. Yashica/Contax Diaphragm Housing Assembly

Vivitar Ref.	Vivitar Part No.	Description	Quantity	Part Code
56	3107468	SCREW, FLTHD, 1.4x3.0	3	Z75968B 760520
57	3107469	RING, BLADE, RTNG	1	K54017 800110
62	3107472	HOUSING, DIAPHRAGM	1	K54019 800110
66	3107473	SLEEVE, THREADED	1	K54926 800110
67	3102867	SCREW, SHOULDER	1	V82904 770718
68	3105506	SCREW, SPRING POST	1	K17916 790203
69	3107474	PLATE, STOP	1	K54704 800110
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B 760520
72	3102869	RING, RTNG, EXT	1	V82709 770718
110	3109977	RING, BLADE OPERATING	1	K54708 800110
187	3107510	SPRING, COIL, TENSION	1	K54923 800110
227	3109978	CAM, APERTURE	1	K54726 810210
517	3109914	BLADE, DIAPHRAGM	6	K54C61 N800630
518	3109995	CRANK, CAM FOLLOWER	1	K54C62 N800630

Parts List for Figure 4-15. Yashica/Contax Mount Assembly

Vivitar Ref.	Vivitar Part No.	Description	Quantity	Part Code
70	3512984	SCREW, PANHD, 1.4x1.8	2	Z75922B 760520
87	3513843	SETSCREW, 1.4x2.0	3	Z75918B 760520
90	3512898	BALL, STEEL, 1.6	88	Z75919 760520
91	3512857	SPRING, DETENT, 1.5	1	Z75920 760520
92	3512990	SCREW, PANHD, 1.4x2.5	8	Z75952B 760520
93	3107488	FORK, APERTURE TRANSFER	1	K54707 800110
138	3512974	SCREW, FLTHD, 1.4x2.0	3	Z75912B 760520
158	3512986	SCREW, PANHD, 1.4x1.8x2.0	2	Z75926B 760520
193	3101632	SCREW, PANHD, 1.4x2.2x3.0	2	Z15921B 721215
202	3107516	SCREW, SPRING POST	1	V25932 760817
211	3102920	PLATE, STOP	1	V82732 770718
221	3102928	SPRING, COIL, TENSION, 2.0x8.0	1	V82929 770718
228	3109979	RING, APERTURE INDEX	1	V54007YB810210
229	3109980	FRAME, MOUNT	1	K54054 810210
230	3109981	RING, APERTURE SETTING	1	K54016YB810210
231	3109944	FORK, APERTURE TRANSFER	1	K54724 810210
232	3109945	SPACER, MOUNT, 0.5	1	K53905 810210
233	3109946	RING, BALL RTNG	1	K53022 810210
234	3109947	RING, DIAPHRAGM TRANSFER	1	K53020 810210
235	3109982	ARM, DIAPHRAGM TRANSFER	1	K54725 810210
236	3109949	ARM, DIAPHRAGM COUPLING	1	K53704 810210
237	3109950	RING, RTNG, INT	1	K53708 810210
238	3109951	RING, APERTURE TRANSFER	1	K53021 810210
239	3109952	ARM, APERTURE COUPLING	1	K53702 810210
240	3109953	MOUNT, Y/C	1	K53019 810210
241	3518091	SCREW, PANHD, 1.7x4.9, CHR	3	Z75985W 760520
242	3109983	PIPE, SHADE	1	K54056 810210
243	3109955	LUG, MAX APERTURE	1	K53707 810210

**Automatic Fixed Mount
Variable Focus Lens
28–85mm f/2.8–3.8**

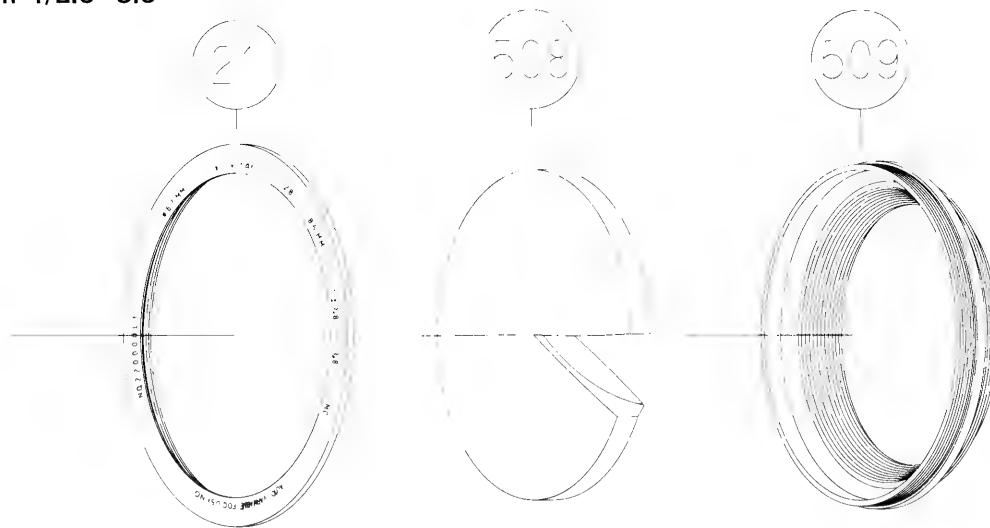


Figure 4-16. First Lens Group Assembly (Ref. 501)

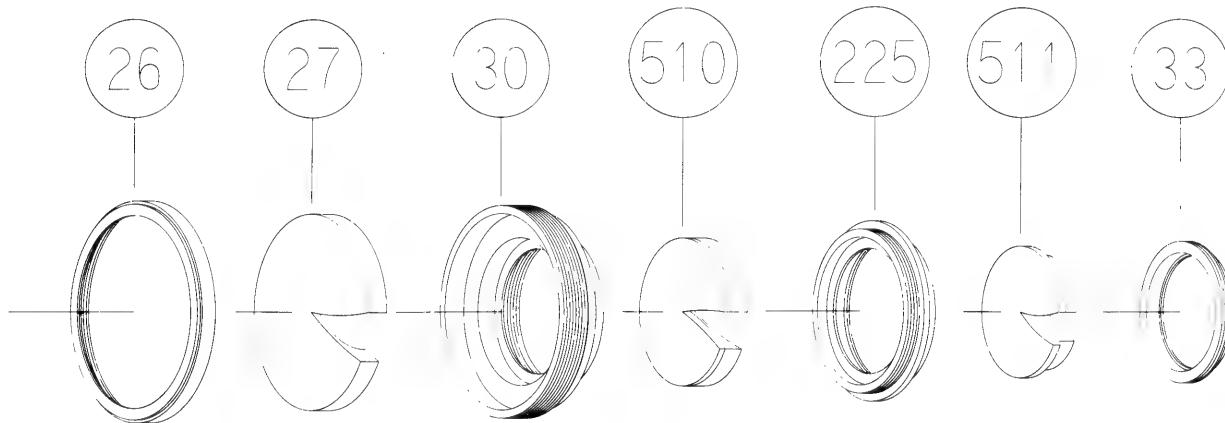


Figure 4-17. Second Lens Group Assembly (Ref. 502)

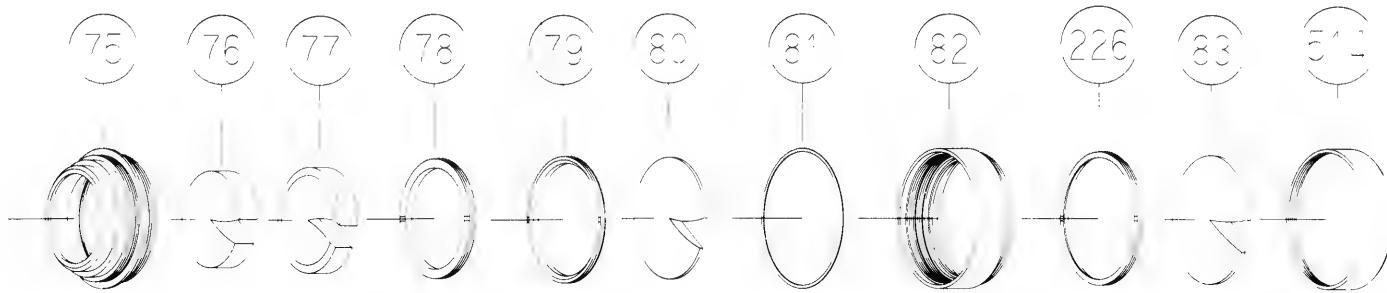


Figure 4-18. Fourth Lens Group Assembly (Ref. 506)

Parts List for Figure 4-16. First Lens Group Assembly (Ref. 501)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
21	3107446	RING, NAME	1	V54002 800417
508	3107538	LENS DOUBLET, 1ST & 2ND ELEMENTS	1	K54N91N 800521
509	3107539	HOUSING, 1ST LENS GROUP	1	K54N85N 800521

Parts List for Figure 4-17. Second Lens Group Assembly (Ref. 502)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
26	3107447	RING, 4TH ELEMENT RTNG	1	K54011 800110
27	3107448	LENS ELEMENT, 4TH	1	G00304 800919
30	3107449	HOUSING, 2ND LENS GROUP	1	K54012 800919
33	3107450	RING, 7/8 ELEMENTS RTNG	1	K54013 800110
225	3107529	RING, SPACER, 6TH & 7TH ELEMENTS	1	K54052 800919
510	3107540	LENS DOUBLET, 5TH & 6TH ELEMENTS	1	K54N92N 800521
511	3107541	LENS DOUBLET, 7TH & 8TH ELEMENTS	1	K54N93N 800521

Parts List for Figure 4-18. Fourth Lens Group Assembly (Ref. 506)

Ref.	Vivitar Part No.	Description	Quantity	Part Code
75	3107476	HOUSING, 10/11 ELEMENTS	1	K54022 800110
76	3107477	LENS ELEMENT, 10TH	1	G00310 800110
77	3107478	LENS ELEMENT, 11TH	1	G00311 800110
78	3107479	RING, 11TH ELEMENT RTNG	1	K54023 800110
79	3107480	RING, 12TH ELEMENT RTNG	1	K54024 800110
80	3107481	LENS ELEMENT, 12TH	1	G00312 800110
81	3107482	RING, SPACER, 12TH ELEMENT	1	K54913 800110
82	3107483	HOUSING, 12TH ELEMENT	1	K54025 800919
83	3107484	LENS ELEMENT, 13TH	1	G00313 800110
226	3107530	RING, 13TH ELEMENT RTNG	1	K54053 800919
514	3107544	HOUSING AND 14TH ELEMENT	1	K54N86N 800521

**Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8**

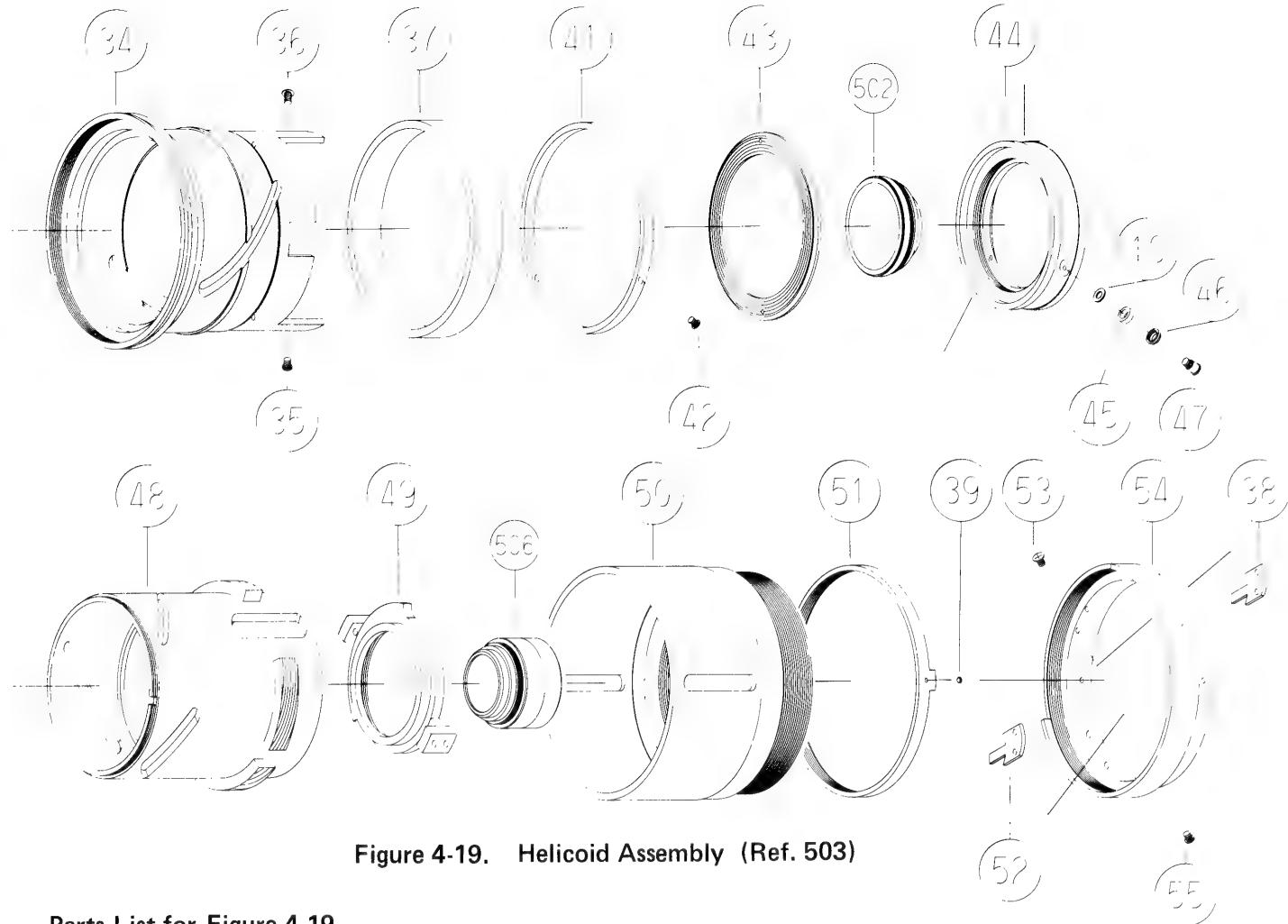


Figure 4-19. Helicoid Assembly (Ref. 503)

Parts List for Figure 4-19

Ref.	Vivitar Part No.	Description	Quantity	Part Code
10	3104698	WASHER, CAM SLOT ROLLER	5	K80935 771115
34	3107451	TUBE, CAM	1	K54005 800110
35	3512982	SCREW, PANHD, 1.7x3.0	2	Z75933B 760520
36	3105722	SCREW, FLTHD, 1.7x4.0	2	K80913B 771115
37	3107452	RING, IDLER	1	K54006 800110
38	3107453	GUIDE, HELICOID	1	K54723 800110
39	3107454	SETSCREW, 1.4x1.5	2	K56914 800515
41	3107455	RING, IDLER RING RTNR	1	K54007 800110
42	3512985	SCREW, FLTHD, 1.7x3.0	3	Z75927B 760520
43	3107456	RING, LIGHT BAFFLE	1	K54008 800110
44	3107457	RING, 2ND LENS GROUP SLIDE	1	K54010 800110
45	3107458	ROLLER, CAM, B	3	K54903 800110
46	3107459	ROLLER, CAM, A	3	K54902 800110
47	3107460	SCREW, ROLLER SHAFT	3	K54904 800110
48	3107461	HELICOID, INNER	1	K54009 800110
49	3107462	SLIDE, 4TH LENS GROUP	1	K54021 800110
50	3107463	HELICOID, OUTER	1	K54014 800110
51	3107464	RING, INFINITY STOP	1	K54027 800110
52	3107465	GUIDE, HELICOID	1	K54700 800110
53	3104709	SCREW, FLTHD, 1.7x3.5	2	K80914B 771115
54	3107466	FRAME, HELICOID	1	K54028 800110
55	3107467	SCREW, PANHD, 1.7x2.5	2	K54922B 800110
502	3107532	SECOND LENS GROUP ASSY	1	K54N82N 800521
506	3107536	FOURTH LENS GROUP ASSY	1	K54N84N 800521

COMPLETE PARTS LIST

Vivitar Part No.	Part Code	Description	Ref.	Quantity					
				N	M	C	K	O	P
3101494	K24925B	SCREW, PANHD, 1.7x2.0	129			2			
3101527	K24725	LUG, EE SIGNAL	117		1				
3101528	K24724	LUG, APERTURE TRANSFER	119		1				
3101530	K24820	PIN, EE SIGNAL	121		1				
3101538	K24726	PLATE, STOP, DIAPHRAGM ACTUATOR	127		1				
3101539	K24727	PLATE, STOP, APERTURE SETTING	128		1				
3101540	K24952	SPRING, COIL, TENSION, 1.5x38.0	126		1				
3101541	K24957B	SCREW, PANHD, 1.4x2.0	137		3				
3101543	K24951	SCREW, SPRING POST	140		2				
3101544	K24041	RING, BALL RTNR, OUTER	143		1				
3101545	K24042	RING, BALL RTNR, INNER	147		1				
3101546	K24731	PLATE, STOP, BREECHLOCK	152		1				
3101547	K24043	RING, BREECHLOCK	151		1				
3101553	K24964	RING, MOUNT SPACER, 0.5	161			1			
3101557	K24047	RING, BALL RTNR	162			1			
3101560	K24963W	SCREW, FLTHD, 1.4x5.0	153			3			
3101561	K24049	RING, MOUNT COVER	167			1			
3101562	K24958	SCREW, PIVOT POST	170			1			
3101563	K24962	SPRING, WIRE, MANUAL LEVER	171			1			
3101564	K24737	SPRING, LEAF, LOCK RELEASE	174			1			
3101565	K24739	PLATE, MOUNTING	175			1			
3101567	K24050	RING, APERTURE TRANSFER	176			1			
3101568	K24960	SCREW, MANUAL BUTTON	179			1			
3101569	Z15808	BUTTON, MANUAL, CHR	180			1			
3101570	K24959	SCREW, LOCK PLATE	181			1			
3101571	Z15807	BUTTON, LOCK RELEASE, CHR	183			1			
3101572	K24051	MOUNT, OLYMPUS	178			1			
3101573-1	K24968W	SCREW, PANHD, 1.7x8.0, CHR	185			3			
3101586	K24753	RING, RTNG, INT	215					1	
3101603	V82015	RING, BALL RTNG	98	1					
3101607	V82017	MOUNT, NIKON AI	104	1					
3101608	V82909W	SCREW, PANHD, 1.7x4.5, CHR	106	5					
3101632	Z15921B	SCREW, PANHD, 1.4x2.3	193		2				2
3102855	V82905	SCREW, STOP	20	1	1	1	1	1	1
3102867	V82904	SCREW, SHOULDER	67	1	1	1	1	1	1
3102869	V82709	RING, RTNG, EXT	72	1	1	1	1	1	1
3102882	V82030	RING, SHIELD	124		1				
3102918	V82947	SPRING, COIL, TENSION, 1.5x38.0	125		1				
3102920	V82732	PLATE, STOP	211					1	1
3102926	K24062	RING, BALL RTNG	217					1	
3102928	V82929	SPRING, COIL, TENSION, 2.0x8.0	221					1	1
3102929	V82729	ARM, DIAPHRAGM COUPLING	220					1	
3102930	K24061	MOUNT, P/K, M	222					1	
3102943	V82052	RING, BALL RTNG	262			1			
3102944	V82053	RING, DIAPHRAGM TRANSFER	264			1			
3102947	V82737	ARM, DIAPHRAGM COUPLING	265			1			
3102948	V82054	MOUNT, KONICA	268			1			
3102953	V82930	SCREW, SHOULDER	248			1			
3102960	V82061	RING, INTERMEDIATE MOUNTING	194		1				
3102961	K90910B	SCREW, FLTHD, 1.4x4.0	195	3					
3102964	K24021	RING, BALL RTNG	197		1				
3102965	V82062	RING, DIAPHRAGM TRANSFER	201		1				
3102967	V82937	SPRING, COIL, TENSION, 2.0x5.0	204		1				
3102968	V82745	ARM, DIAPHRAGM COUPLING	198		1				
3102969	V82936	SPRING, WIRE, DIAPHRAGM ARM	199		1				
3102970	V82935	SCREW, SPRING RTNG	200		1				
3102971	V82063	MOUNT, M/MD	205	1					
3103009	V42C88N	MOUNT, CANON	520		1				
3103010	K24C64N	SPRING, BREECHLOCK CATCH	521		1				
3103020	V42F87N	ARM, DIAPHRAGM COUPLING	515	1					

Automatic Fixed Mount

Variable Focus Lens

28-85mm f/2.8-3.8

COMPLETE PARTS LIST, Continued

Vivitar Part No.	Part Code	Description	Ref.	Quantity						
				N	M	C	K	O	P	Y
3103023	V42K85	N770718	536				1			
3103044	Z75994	771215	192		1					
3104698	K80935	771115	10	5	5	5	5	5	5	5
3104709	K80914B	771115	53	2	2	2	2	2	2	2
3104736	K80741	780921	196	1						
3104743	K80740	780921	123			1				
3104828	K24969B	770720	273	4	4	4	4	4	4	4
3104829	Z71915	790118	103	1						
3104831	Z15918W	770606	136			2		2		
3104843	Z75956	760520	115			2				
3105399	K17900B	790203	7	3	3	3	3	3	3	3
3105415	V82755	790903	97	1						
3105417	Z71012	780710	100	1						
3105434	K24756	780303	168					1		
3105448	V82757	790903	214					1		
3105474	Z71053N	790410	526					1		
3105506	K17916	790203	68	1	1	1	1	1	1	1
3105722	K80913B	771115	36	2	2	2	2	2	2	2
3105771	Z71027	790740	164					1		
3105772	Z71722	780710	165					1		
3205773	Z71905	790514	166					1		
3105787	Z71717	780710	255				1			
3105973	V82758	790903	261			1				
3106563	K24979	780206	184					1		
3107433	V54001	800417	1	1	1	1	1	1	1	1
3107434	K54905	800110	3							
3107434-1	K54906	800110	3							
3107434-2	K54907	800110	3							
3107434-3	K54908	800110	3							
3107434-4	K54909	800110	3							
3107435	V54003	800417	4	1	1	1	1	1	1	1
3107436	K54924	800110	5	1	1	1	1	1	1	1
3107437	V54015	800417	8	1	1	1	1	1	1	1
3107438	V54004	800417	9	1	1	1	1	1	1	1
3107439	K54900	800110	11	2	2	2	2	2	2	2
3107440	K54901	800110	12	2	2	2	2	2	2	2
3107441	V54005	800417	13	1	1	1	1	1	1	1
3107442	K54925	800110	14	1	1	1	1	1	1	1
3107443	V54006	800417	16	1	1	1	1	1	1	1
3107444	K54910	800110	18	1	1	1	1	1	1	1
3107445	K54916	800110	19							
3107445-1	K54917	800110	19							
3107445-2	K54918	800110	19							
3107445-3	K54919	800110	19							
3107445-4	K54920	800110	19							
3107446	V54002	800417	21	1	1	1	1	1	1	1
3107447	K54011	800110	26	1	1	1	1	1	1	1
3107448	G00304	800919	27	1	1	1	1	1	1	1
3107449	K54012	800919	30	1	1	1	1	1	1	1
3107450	K54013	800110	33	1	1	1	1	1	1	1
3107451	K54005	800110	34	1	1	1	1	1	1	1
3107452	K54006	800110	37	1	1	1	1	1	1	1
3107453	K54723	800110	38	1	1	1	1	1	1	1
3107454	K56914	800515	39	2	2	2	2	2	2	2
3107455	K54007	800110	41	1	1	1	1	1	1	1
3107456	K54008	800110	43	1	1	1	1	1	1	1
3107457	K54010	800110	44	1	1	1	1	1	1	1
3107458	K54903	800110	45	3	3	3	3	3	3	3
3107459	K54902	800110	46	3	3	3	3	3	3	3
3107460	K54904	800110	47	3	3	3	3	3	3	3

COMPLETE PARTS LIST, Continued

Vivitar Part No.	Part Code	Description	Ref.	Quantity						
				N	M	C	K	O	P	Y
3107461	K54009	800110	48	1	1	1	1	1	1	1
3107462	K54021	800110	49	1	1	1	1	1	1	1
3107463	K54014	800110	50	1	1	1	1	1	1	1
3107464	K54027	800110	51	1	1	1	1	1	1	1
3107465	K54700	800110	52	1	1	1	1	1	1	1
3107466	K54028	800110	54	1	1	1	1	1	1	1
3107467	K54922B	800110	55	2	2	2	2	2	2	2
3107468	Z75968B	760520	56	3	3	3	4	3	3	3
3107469	K54017	800110	57	1	1	1	1	1	1	1
3107470	K54702	800110	60	1				1		
3107471	K54921	800110	61	1				1	1	
3107472	K54019	800110	62	1	1	1		1	1	1
3107473	K54926	800110	66	1	1	1		1	1	1
3107474	K54704	800110	69	1	1	1		1	1	1
3107475	K54705	800110	71	1						
3107476	K54022	800110	75	1	1	1	1	1	1	1
3107477	G00310	800110	76	1	1	1	1	1	1	1
3107478	G00311	800110	77	1	1	1	1	1	1	1
3107479	K54023	800110	78	1	1	1	1	1	1	1
3107480	K54024	800110	79	1	1	1	1	1	1	1
3107481	G00312	800110	80	1	1	1	1	1	1	1
3107482	K54913	800110	81	1	1	1	1	1	1	1
3107483	K54025	800919	82	1	1	1	1	1	1	1
3107484	G00313	800110	83	1	1	1	1	1	1	1
3107485	V54007NB800417		86	1						
3107486	K54031	800110	88	1						
3107487	V82711	770718	89	1	1					
3107488	K54707	800110	93	1	1					1
3107489	V54008NB800417		94	1						
3107490	K54706	800110	99	1						
3107491	K54033	800110	109	1						
3107492	K54708	800110	110		1	1			1	1
3107493	K54710	800110	112			1				
3107494	V54007CB800417		113			1				
3107495	K54034	800110	114			1				
3107496	V54009CB800417		116			1				
3107497	V82027	770718	120			1				
3107498	K54036	800110	139			1				
3107499	K54712	800110	142			1				
3107500	K54713	800110	154					1		
3107501	V54007OB800417		155						1	
3107502	K54038	800110	156						1	
3107503	K54715	800110	157						1	
3107504	Z75926B	760520	158		2	2	4	2	2	2
3107505	K54722	800110	159						1	
3107506	V54010OB800417		160						1	
3107507	K54714	800110	163						1	
3107508	K54716	800110	177						1	
3107509	K54040	800110	186						1	
3107510	K54923	800110	187	1	1				1	
3107511	K54717	800110	188		1					
3107512	V54007MB800417		189	1						
3107513	K54041	800110	190	1						
3107514	V54011MB800417		191	1						
3107516	V25932	760817	202	1					1	1
3107517	K54718	800110	203	1						
3107518	K54043	800110	207	1						1
3107519	K54719	800110	208							
3107520	V54007PB800417		209							1
3107521	K54044	800110	210							1

**Automatic Fixed Mount
Variable Focus Lens
28-85mm f/2.8-3.8**

COMPLETE PARTS LIST, Continued

Vivitar Part No.	Part Code	Description	Ref.	Quantity					
				N	M	C	K	O	P
3107522	V54012PB800417	RING, APERTURE SETTING	212						1
3107523	K54721 800110	FORK, APERTURE TRANSFER	213						1
3107524	K54051 800110	RING, APERTURE COUPLING	216						1
3107525	K54720 800110	ARM, DIAPHRAGM TRANSFER	218						1
3107526	K54046 800110	RING, DIAPHRAGM TRANSFER	219						1
3107527	V25923W 760817	SCREW, PANHD, 1.7x4.0, CHR	223						5
3107528	K54047 800110	PIPE, SHADE	224						1
3107529	K54052 800919	RING, SPACER, 6TH & 7TH ELEMENTS	225	1	1	1	1	1	1
3107530	K54053 800919	RING, 13TH ELEMENT RTNG	226	1	1	1	1	1	1
3107531	V54N81N 800909	FIRST LENS GROUP ASSY	501	1	1	1	1	1	1
3107532	K54N82N 800521	SECOND LENS GROUP ASSY	502	1	1	1	1	1	1
3107533	K54N41N 800630	HELICOID ASSY	503	1	1	1	1	1	1
3107534	K54N31N 800630	DIAPHRAGM HOUSING ASSY, NIKON	504	1					
3107535	G00309 800110	THIRD LENS GROUP ASSY	505	1	1	1	1	1	1
3107536	K54N84N 800521	FOURTH LENS GROUP ASSY	506	1	1	1	1	1	1
3107537	V54N21N 800909	MOUNT ASSY, NIKON	507	1					
3107538	K54N91N 800521	LENS DOUBLET, 1ST & 2ND ELEMENTS	508	1	1	1	1	1	1
3107539	K54N85N 800521	HOUSING, 1ST LENS GROUP	509	1	1	1	1	1	1
3107540	K54N92N 800521	LENS DOUBLET, 5TH & 6TH ELEMENTS	510	1	1	1	1	1	1
3107541	K54N93N 800521	LENS DOUBLET, 7TH & 8TH ELEMENTS	511	1	1	1	1	1	1
3107542	K54N61N 800630	BLADE ASSY, DIAPHRAGM	512	6					6
3107543	K54N62N 800630	CRANK, CAM FOLLOWER	513	1					1
3107544	K54N86N 800521	HOUSING AND 14TH ELEMENT	514	1	1	1	1	1	1
3107545	K54C31N 800630	DIAPHRAGM HOUSING ASSY, CANON	516			1			
3107546	K54C61N 800630	BLADE ASSY, DIAPHRAGM	517		6	6	6	6	6
3107547	K54C62N 800630	CRANK, CAM FOLLOWER	518		1	1			1
3107548	V54C21N 800909	MOUNT ASSY, CANON	519			1			
3107549	K54C51N 800630	RING, DIAPHRAGM TRANSFER	522			1			
3107550	K54C52N 800630	PIPE, SHADE	523			1			
3107551	K54O31N 800630	DIAPHRAGM HOUSING ASSY, OLYMPUS	524					1	
3107552	V54O21N 800909	MOUNT ASSY, OLYMPUS	525					1	
3107553	K54M31N 800630	DIAPHRAGM HOUSING ASSY, MINOLTA	527		1				
3107554	V54M21N 800909	MOUNT ASSY, MINOLTA	528		1				
3107555	K54P31N 800630	DIAPHRAGM HOUSING ASSY, PENTAX	529						1
3107556	V54P21N 800909	MOUNT ASSY, PENTAX	530						1
3109913	K56915 810210	SPRING, COIL, TENSION	272				1		
3109919	K53709 810210	LUG, APERTURE LIMIT STOP	256					1	
3109920	K53710 810210	PLATE, APERTURE LIMIT STOP	257					1	
3109944	K54724 810210	FORK, APERTURE TRANSFER	231						1
3109945	K53905 810210	SPACER, MOUNT, 0.5	232						1
3109946	K53022 810210	RING, BALL RTNG	233						1
3109947	K53020 810210	RING, DIAPHRAGM TRANSFER	234						1
3109949	K53704 810210	ARM, DIAPHRAGM COUPLING	236						1
3109950	K53708 810210	RING, RTNG, INT	237						1
3109951	K53021 810210	RING, APERTURE TRANSFER	238						1
3109952	K53702 810210	ARM, APERTURE COUPLING	239						1
3109953	K53019 810210	MOUNT, Y/C	240						1
3109955	K53707 810210	LUG, MAX APERTURE	243						1
3109978	K54726 810210	CAM, APERTURE	227						1
3109979	V54007YB810210	RING, APERTURE INDEX	228						1
3109980	K54054 810210	FRAME, MOUNT	229						1
3109981	K54016YB810210	RING, APERTURE SETTING	230						1
3109982	K54725 810210	ARM, DIAPHRAGM TRANSFER	235						1
3109983	K54056 810210	PIPE, SHADE	242						1
3109984	K54060 810210	HOUSING, DIAPHRAGM	246			1			
3109985	K54729 810210	LEVER, APERTURE CAM	247			1			
3109986	K54730 810210	ARM, CAM LEVER EXTENSION	249			1			
3109987	V54017KB810615	RING, APERTURE INDEX	253			1			
3109988	K54057 810210	FRAME, MOUNT	254			1			
3109989	V54018KB810615	RING, APERTURE SETTING	260			1			

COMPLETE PARTS LIST, Continued

Vivitar Part No.	Part Code	Description	Ref.	Quantity							
				N	M	C	K	O	P	Y	
3109990	K54727	810210	ARM, DIAPHRAGM TRANSFER	263				1			
3109991	K56053	810210	PIPE, SHADE	270				1			
3109992	K54061	810210	RING, REAR PROTECTIVE	271				1			
3109996	K54Y31	N810210	DIAPHRAGM HOUSING ASSY, Y/C	531						1	
3109997	V54Y21	N810210	MOUNT ASSY, Y/C	532						1	
3109998	K54K31	N810210	DIAPHRAGM HOUSING ASSY, KONICA	533				1			
3109999	V54K21	N810210	MOUNT ASSY, KONICA	534				1			
3110000	K54K61	N810210	RING, APERTURE CAM COUPLING	535				1			
3110001	K54K62	N810210	RING, BLADE OPERATING	537				1			
3512825	Z75934B	760520	SCREW, MOUNT STOP, BLK	133			1				
3512825-1	Z75934W	760520	SCREW, MOUNT STOP, CHR	105	1						
3512835	Z75914	760520	SCREW, SPRING POST	107	1	1		1	1		
3512850	Z75940	760520	SPRING, EE SIGNAL PIN	122			1				
3512857	Z75920	760520	SPRING, DETENT, 1.5	91	1	1		1	1	1	
3512885	Z75957	760520	SPRING, COIL, TENSION, 2.5x7.0	267			1				
3512891	Z75961	760520	SCREW, MOUNT STOP	269				1			
3512898	Z75919	760520	BALL, STEEL, 1.6	90	80	80	2	80	1	80	88
3512899	Z75941	760520	BALL, STEEL, 1.2	141			200		112		
3512931	Z75741	760520	PLATE, MOUNT LOCKING	182					1		
3512974	Z75912B	760520	SCREW, FLTHD, 1.4x2.0	138			3	3	3		3
3512976	Z75905B	760520	SETSCREW, 1.4x1.5	15	3	3	3	3	3	3	3
3512980	Z75913B	760520	SCREW, PANHD, 1.7x3.0x3.0	266				2			
3512981	Z85907B	760615	SETSCREW, 1.7x3.0	2	3	3	3	3	3	3	3
3512982	Z75933B	760520	SCREW, PANHD, 1.7x3.0	35	2	2	2	2	2	2	2
3512984	Z75922B	760520	SCREW, PANHD, 1.4x1.8	70	4	2	2	4	8	2	2
3512985	Z75927B	760520	SCREW, FLTHD, 1.7x3.0	42	3	3	3	3	3	3	1
3512990	Z75952B	760520	SCREW, PANHD, 1.4x2.5	92	6	4		4		6	8
3513714	Z75902B	760520	SETSCREW, 1.7x2.0	6	3	3	3	3	3	3	3
3513725	Z85910B	760615	SCREW, PANHD, 1.4x2.8, BLK	118			4				
3513843	Z75918B	760520	SETSCREW, 1.4x2.0	87	3	3	3	3	3	3	3
3513859	Z75963B	760520	SCREW, FLTHD, 1.4x2.5	17	3	6	6	6	3	6	3
3513901	Z75963W	760520	SCREW, FLTHD, 1.4x2.5, CHR	108	2		2				
3514089	Z75912W	760520	SCREW, FLTHD, 1.4x2.0, CHR	169					5		3
3518091	Z75985W	760520	SCREW, PANHD, 1.7x4.9, CHR	241		5		4			
3518107	Z75747	770520	FORK, METER COUPLING	95	1						
3518108	Z15917	770520	SCREW, COUPLING FORK	96	1						



Prepared by:
Service Engineering Div.,

Vivitar Corporation
Corporate Offices:
1630 Stewart Street, Santa Monica, Ca 90406

Printed in U.S.A.

Vivitar is an International Trademark of Vivitar Corporation